

JANUARY, 1956

TECHNOLOGY DEPT.

PURCHASING

A Conover-Mast Publication

The New Science of Purchasing

A Special Report



Buying the Right Material page 76

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... of the Right Quality page 86

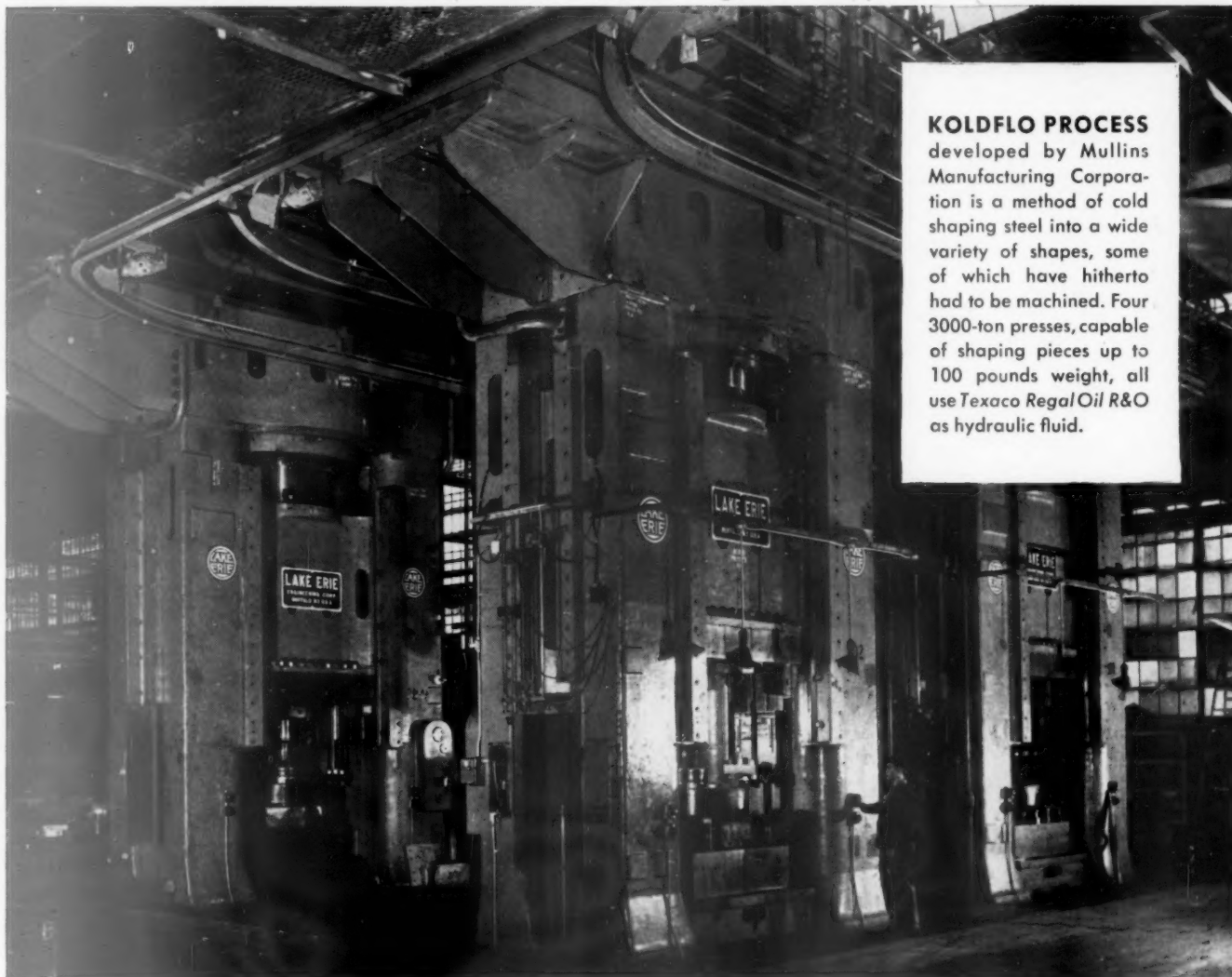
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... at the Right Price page 99

Letting Management Know page 126

One Dollar

R v. 40' J2-Mr '56



KOLDFLO PROCESS

developed by Mullins Manufacturing Corporation is a method of cold shaping steel into a wide variety of shapes, some of which have hitherto had to be machined. Four 3000-ton presses, capable of shaping pieces up to 100 pounds weight, all use *Texaco Regal Oil R&O* as hydraulic fluid.

"Systems completely free of sludge, rust and foam"

—reports Mullins Manufacturing Corporation, Warren, Ohio

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ten times the oxidation resistance of ordinary turbine-quality oils — far greater ability to keep systems free from sludge, rust and foam. And there is a complete line of Texaco Regal Oils R&O to meet the requirements of all types and sizes of hydraulic equipment, all operating conditions.

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TEXACO Regal Oils R&O

FOR ALL HYDRAULIC UNITS

TUNE IN: TEXACO STAR THEATER starring JIMMY DURANTE on TV Sat. nights. METROPOLITAN OPERA radio broadcasts Sat. afternoons.

For More Information Circle No. 151 on Inquiry Card—Page 17

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B. F. Goodrich

COST REDUCTIONS WITH RUBBER



Where rubber hose outlasts flexible metal pipe 5 to 1

At this Connecticut plant, they used the best flexible metal pipe to unload quicklime from a freight car. But the sharp, destructive quicklime wore and ate through the pipe in a few weeks. Then B. F. Goodrich hose, with a special tough rubber lining, was tried. It lasts five times as long as the more expensive metal, and is easier to handle from railroad car to storage because it's much more flexible.



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For More Information Circle No. 155 on Inquiry Card—Page 17



Steep angle conveyor belt increases stacking height 40%

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THESE actual cases are typical of thousands where improved B. F. Goodrich products have saved money by lasting longer or doing jobs other materials couldn't do. The cost of anything, of course, is its price divided by the length of service it delivers. Buying for long service is the only businesslike way to buy anything and that is why B. F. Goodrich products cost so much less.

The time saved in buying, handling and repairs, is an extra B. F. Goodrich dividend you get when you call your B. F. Goodrich distributor for rubber products. The B. F. Goodrich Co., Dept. M-524, Akron 18, Ohio.

B. F. Goodrich

INDUSTRIAL PRODUCTS DIVISION

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PURCHASING

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THE ICEMAN GOETH...

Ever stop to reflect on how American traditions are being quietly but constantly removed from the scene by progress? The iceman, for instance. In our day, the development of modern refrigerators and more than a hundred other household appliances has made life a great deal

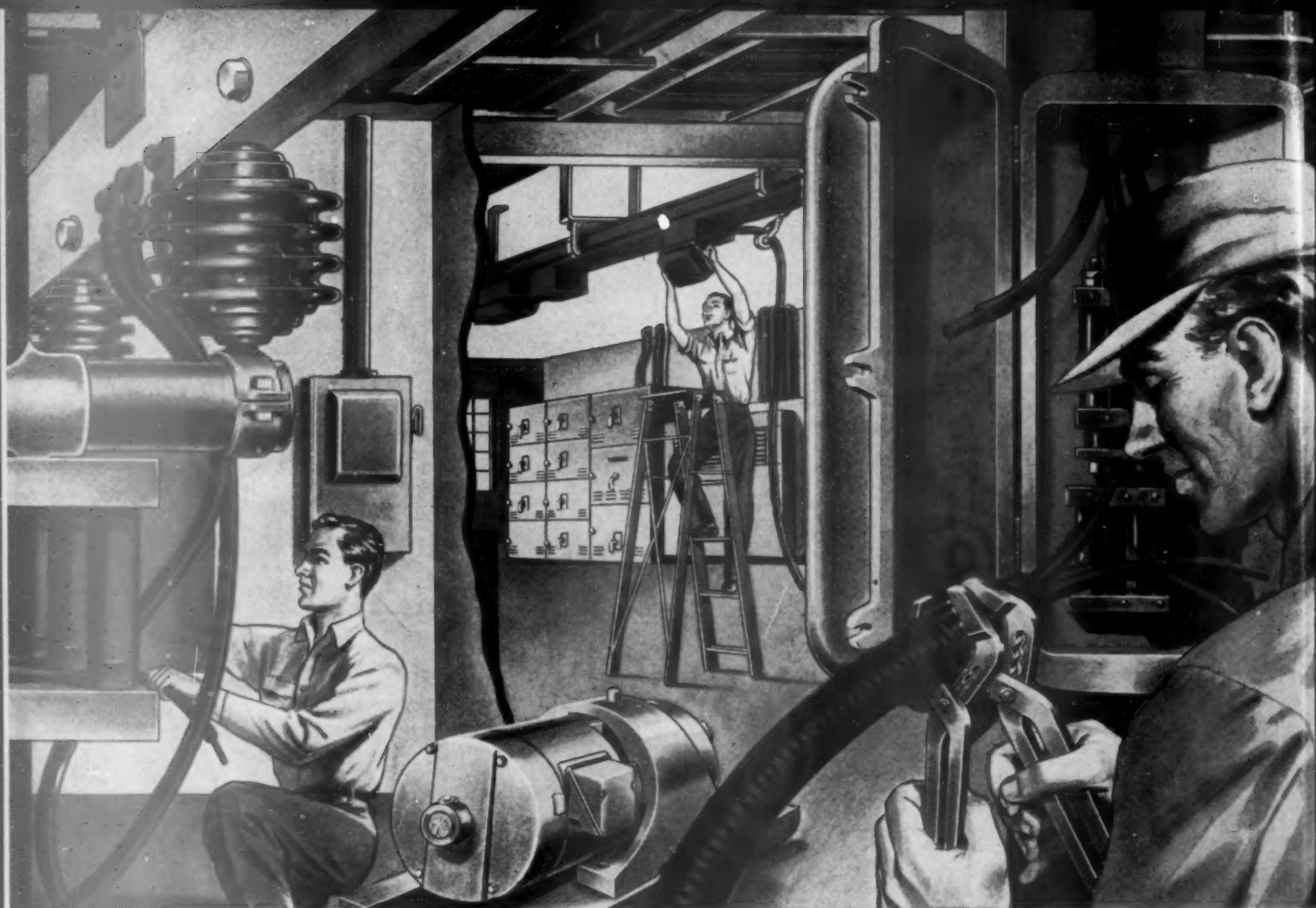
more pleasant. A vigorous and imaginative appliance industry has emancipated us from household drudgery.

New and better steels have played their part in this evolutionary process. And here at Inland, we've been pleased to work closely with appliance manufacturers, over the years, to provide the *right* steels for their products.

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Bulldog BUStribution is today's most efficient, most modern electrical distribution system. It provides the utmost in plant layout flexibility:

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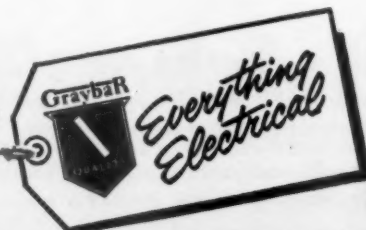
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464-171

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The National Magazine of Industrial Purchasing

VOL. 40, No. 1

JANUARY, 1956

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NBP

BPA

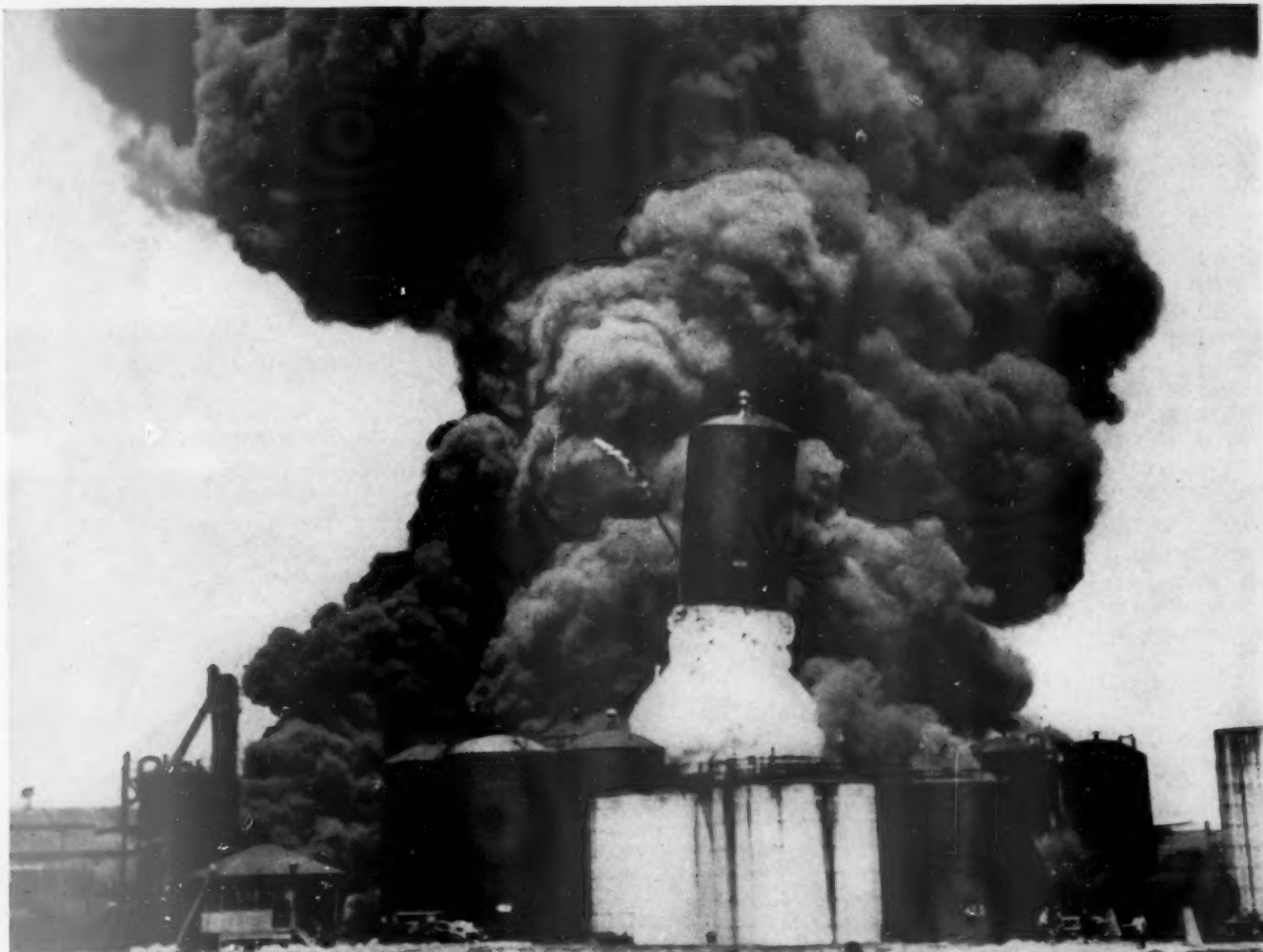
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\$500,000 skyrocket!

An exploding 2000-barrel asphalt tank booms skyward, showering flaming asphalt on adjacent tanks, to devastate this storage area. Once fire has gained such headway, it becomes extremely difficult to control.

But there is a time when practically any fire can be controlled — and kept from turning into a disaster. That moment is at the very start — and the way to do it is with a Grinnell Fire Protection System.

Grinnell has spent more than three-quarters of a century building and installing reliable fire protection systems. Today Grinnell can offer you a system for every need. If you face a fire problem, call on Grinnell. Grinnell engineers are trained to evaluate your property and advise on the proper system for you. With a full range of equipment, you are assured of unbiased recommendations which will be fitted to your needs. Grinnell Company, Inc., 273 West Exchange St., Providence, R. I.

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- Emulsion and vapor dilution extinguishment — Mulsifyre and ProtectoSpray systems
- Water spray for cooling, insulation, and controlled burning — ProtectoSpray systems
- Air foam blanket — ProtectoFoam systems
- Carbon dioxide blanket — C-O-Two systems
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GRINNELL



— Manufacturing, Engineering, and Installation of Fire Protection Systems Since 1870 —

For More Information Circle No. 158 on Inquiry Card—Page 17

Thor discovers how to muffle air motor noise

75% quieter!



NEW THOR *Silentair* SCREWDRIVERS

*Less noise on your lines means
more production, better employee
relations and morale*

YES, here is 75% less noise on your production line... the great new Thor "Silentair" Screwdrivers! A steel sleeve with 24 perforations is attached over the exhaust of any of these Thor No. 2 series straight screwdrivers. This sleeve, with its acoustical pattern of holes, breaks up and absorbs the sound of the air motor.

Hear the difference between standard air driven screwdrivers and Thor's new "Silentair." Try one. Then try the other. Then you'll know what silent air power can mean in your plant.

"Silentair" is optional equipment on Thor air screwdrivers—the most powerful available to industry. For a demonstration, contact your nearest Thor factory branch listed below, or write Thor Power Tool Company, Aurora, Illinois.



Quiet power on your lines lets employees do better work, improves output—fewer mishaps, mistakes.



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For More Information Circle No. 159 on Inquiry Card—Page 17



NOSCO "CAN DO"

Other injection molders said... "Impossible"

We took a second look

It was a complex air-conditioning grille—no question about that. But impossible? —our ingenious engineers didn't think so. We helped with the plastic-part design . . . developed a special molding material . . . designed a mold with almost 90 feet of parting line . . . then built the mold. We molded the several plastic parts on our modern pre-plasticized presses, inspected, decorated, and conveyor-line assembled. Nosco packed and palletized the finished parts according to our customer's needs—shipped the initial desired quantity as scheduled, and the rest were stored in the warehouse section of our 227,000 sq. ft. plant, awaiting releases.

Not every job we do is an "impossible" one. But Nosco "Can Do" can make any plastics problem seem easier. We've proved it over and over again. Let Nosco prove it to you on your next plastic part.

For other case histories—and a glimpse of the Nosco plant and facilities, send for the free 12 page brochure: "How the Nosco Plant Works To Produce Your Needs In Practical Plastics."



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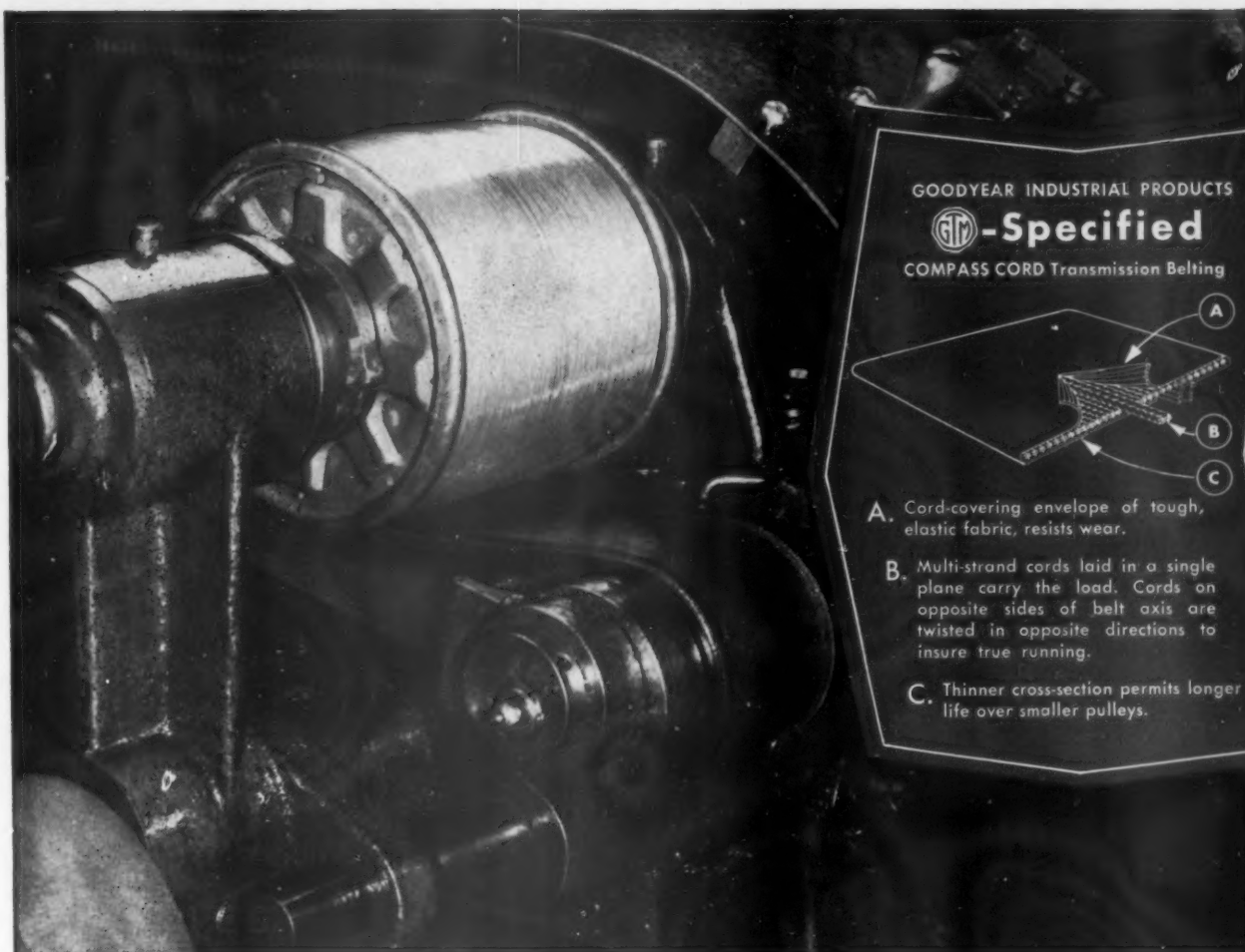
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World's largest injection molding plant

For More Information Circle No. 160 on Inquiry Card—Page 17



1200% more life from wire-winding belts

ONCE steel wire is drawn, it must be wound on spools. This is done on special machines with the help of short, endless belts.

Previously used belts lasted only six weeks. Excessive oil, severe abrasion, short centers and high speed were the reasons for such short life. The G.T.M.—Goodyear Technical Man—was consulted. He suggested COMPASS CORD Transmission Belts (see blueprint) with oil-resistant top covers.

RESULT: These endless cord belts cost less than half of those formerly used—last an average of 18

months—cut down-time and maintenance costs inestimably.

How can the G.T.M. and COMPASS CORD Transmission Belts cut your drive costs? Find out by contacting him, your Goodyear Distributor or writing Goodyear, Industrial Products Division, Akron 16, Ohio.

YOUR GOODYEAR DISTRIBUTOR can quickly supply you with *Hose, Flat Belts, V-Belts, Packing or Rolls*. Look for him in the yellow pages of your Telephone Directory under "Rubber Products" or "Rubber Goods."

COMPASS CORD TRANSMISSION BELTS by

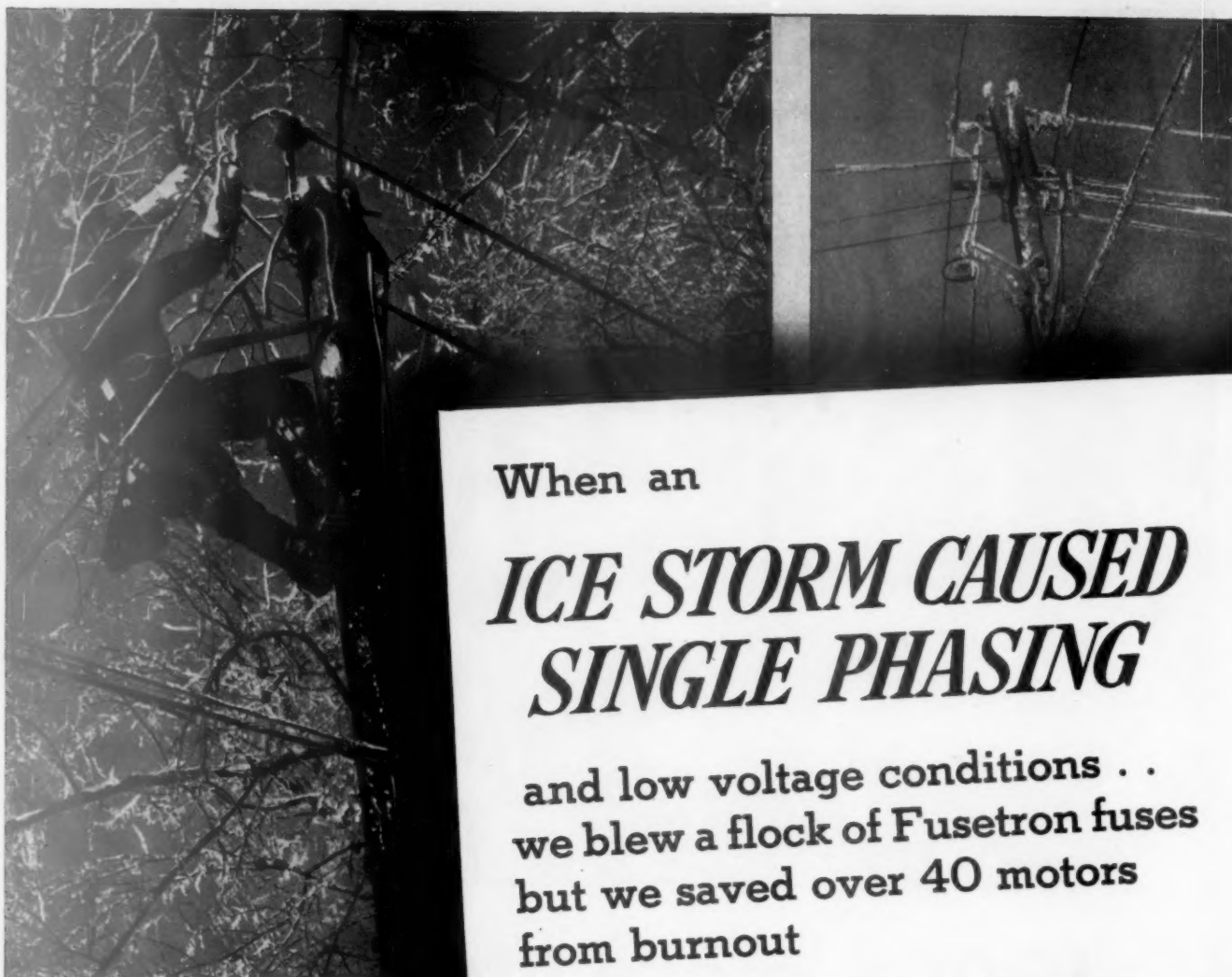
GOODYEAR

THE GREATEST NAME IN RUBBER

Compass—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

For More Information Circle No. 161 on Inquiry Card—Page 17

JANUARY, 1956



When an

ICE STORM CAUSED SINGLE PHASING

and low voltage conditions . .
we blew a flock of Fusetron fuses
but we saved over 40 motors
from burnout

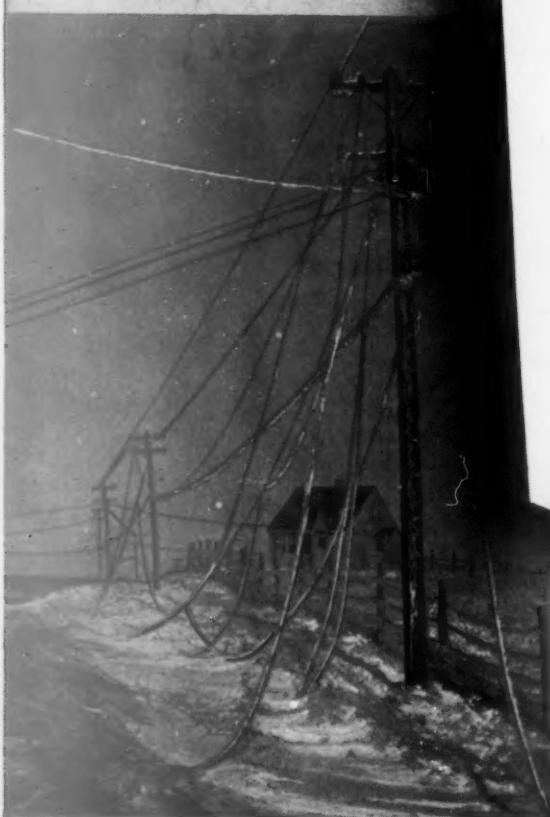
"For twenty-four hours after the bad ice storm of February 15, 1950 we were endangered by single phasing and low voltage conditions due to the damage done the power lines by the ice.

"During this period, we blew a flock of Fusetron dual-element fuses—around 240 in fact—but we figure

that was a very cheap price to pay for saving over 40 motors from burning up.

"After this experience we didn't lose any time in putting all of our plant and equipment under Fusetron Fuse protection."

Michael G. Kupcho,
Master Mechanic
Ashland Shirt and Pajama Company
Ashland, Pennsylvania





It might
were op



Muted Rake

"Obtaining
will not sme
when some on
cement on th
Horsecar t"

You too, can be safe from
electrical hazards by using

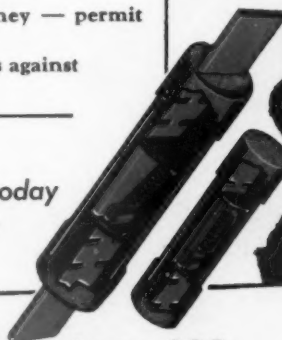
Fusetron DUAL ELEMENT Fuses

They provide
10 Point Protection

- 1 High interrupting capacity—protect against heaviest short-circuits. Have proven on tests to open safely on circuits set to deliver in excess of 100,000 amperes.
- 2 Protect against needless blows caused by harmless overloads.
- 3 Protect against needless blows caused by excessive heating—lesser resistance results in cooler operation.
- 4 Provide thermal protection — for panels and switches against damage from heating due to poor contact.
- 5 Protect motors against burnout from overloading.
- 6 Protect motors against burnout due to single phasing.
- 7 Give DOUBLE burnout protection to large motors — without extra cost.
- 8 Make protection of small motors simple and inexpensive.
- 9 Protect against waste of space and money — permit use of proper size switches and panels.
- 10 Protect coils, transformers and solenoids against burnout.

— Write for bulletin FIS. —

DON'T RISK LOSSES — Start today
to install FUSETRON fuses throughout
the entire electrical system!



**For loads above 600
and up to 5,000 amps., . . .
use BUSS Hi-Cap Fuses . . .**



They have unlimited interrupting capacity to handle any fault current regardless of system growth.

Overload protection as well as short-circuit protection.

Coordinated with Fusetron fuses on feeder and branch cir-

cuits to limit fault outages to circuits of origin.

Dependable service through the years because there are no moving parts to stick or get out of order.

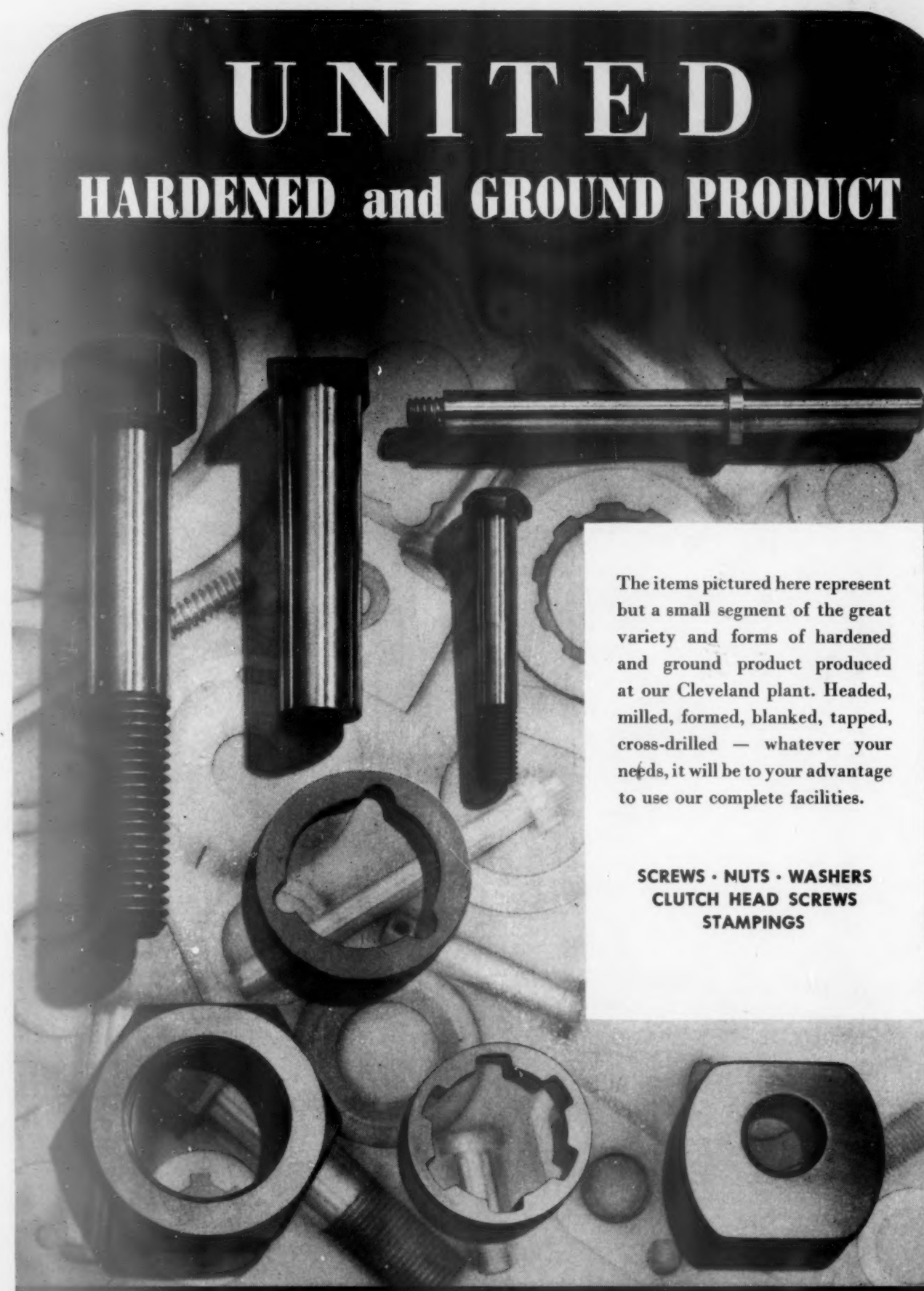
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CLUTCH HEAD SCREWS
STAMPINGS

United Screw and Bolt Corporation

Chicago 8

Cleveland 2

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WASHINGTON REPORT

for purchasing agents

January 1, 1956

MATERIAL SHORTAGES LIKELY

Industry is again heading into a market where there will be many shortages. While the military take has been shaded, and now represents a much smaller fraction of material usage, other uses are booming. So much so that there is mounting pressure for either mandatory controls over materials, or a form of voluntary allocation.

Tightest situation is in heavy steel. Moreover, there is a tight supply outlook for the two metals that along with the ferrous group make up the backbone of our metal economy—copper and aluminum.

The combination of steel, copper and aluminum has been used as the basis for the various materials control programs initiated by the Government as both war and peace emergency measures.

* * *

CONTROL MEASURES SUGGESTED

Now the heat is on again for some form of controls. The pressure comes from users who want a preferred position in getting on mill schedules—in obtaining deliveries.

Among the groups that have been pushing for allocations of scarce materials either on a mandatory basis or by "voluntary allocations" are transportation and specific large-scale construction.

Within the Government there is strong resistance to either mandatory controls or a voluntary allocation program. Reason for Government reluctance is that with the exception of nickel, where the military take represents a healthy slice of the output, the materials tightness comes from civilian users.

Under the Defense Production Act, the Government is authorized to set up materials allotment programs to meet a military emergency, but not to decide whether available steel is to be diverted from bobby pins to freight cars.

* * *

TIGHT SUPPLY TALLY

Currently, the tight supply outlook is mainly in steel, copper, aluminum, cement, nickel—and in some chemicals. There is surplus in textile fibers and agricultural products. We are in a fairly comfortable situation on rubber and a large group of chemicals.

The problem of material supply will come to a head next year. For a variety of reasons, and with politics not the least of

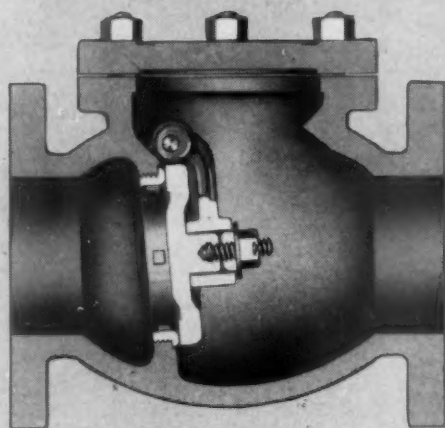
Economy Buy for Many Process Services

IN PULP AND PAPER, WOOD TREATING,
CHEMICAL, PETROLEUM, ETC.

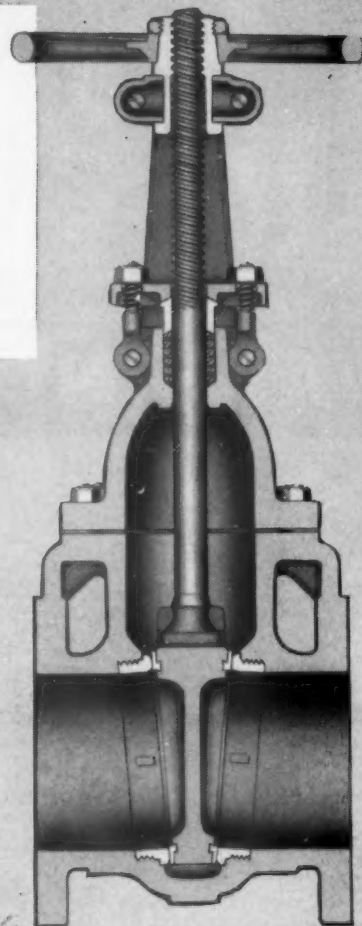
WORKING PRESSURES: GATES AND CHECKS

12 in. and smaller—200 psi W.O.G.

14 in. and larger—150 psi W.O.G.



Cross section, Check, No. 14493
Flanged ends



Cross section, Gate, No. 14477
Flanged ends

Crane Nickel Cast Iron Valves IMMEDIATE DELIVERY from Factory Stocks

Why wait for low nickel alloy cast iron valves when you can get Crane quality—at no extra cost—immediately from factory stocks? Gates on hand in sizes: 2"—2½"—3"—4"—6"—8"—10"—12"—14"—16"—18". Checks in all the same sizes up to 12" incl. (14"—16"—18" will be made to order). This delivery offer good while present stocks last.

These valves have an outstanding record in the pulp and paper industry in handling various alkaline liquors. In wood treating they're used successfully on creosote vapors and oils. They're ideal, in the petroleum industry, for handling oils containing traces of mineral acids.

Crane 18-8 SMO alloy trim in these valves combines with nickel alloy body to assure tight seating and smooth, maintenance-free operation. The gates have Crane features such as: full-length disc guides . . . 2-piece ball-type gland . . . T-head disc-stem connection.

The checks feature all 18-8 SMO trim, including body ring, disc, hinge and hinge pin in sizes 2 to 12 inches. Valves 14 inches and larger have disc same as body, with 18-8 SMO disc faces.

You'll save with these valves on original cost and maintenance. Call a Crane Representative for immediate delivery! Crane Co., General Offices, Chicago 5. Branches and Wholesalers in all industrial areas.

CRANE Since 1855

VALVES & FITTINGS • PIPE • KITCHENS • PLUMBING • HEATING

For More Information Circle No. 164 on Inquiry Card—Page 17

WASHINGTON REPORT

—continued

them, there will be conditions prevailing that will further boom the economy.

The St. Lawrence Seaway development will take large tonnages of steel. There will be a big push on the building of freight cars. It appears certain that the Congress will vote a much larger interstate highway building program. There is little question but that the Federal Government will put money into school construction.

Most of these new demands will be a plus over and above the large tonnages of materials going into various construction and industrial uses. Materials will be tight.

* * *

WAR MEASURES DISCOUNTED

Under these conditions, it would appear that Government would be preparing to work out some method of materials distribution—either on a mandatory or voluntary basis.

But there is little enthusiasm for a Government-supervised control program. Government advisers who went through the World War II CMP program, the postwar voluntary steel allocation program, the Korean version of CMP, and who are currently responsible for the priority program for military uses of materials, are much against a materials control program, even though supply gets very tight.

Heart of the opposition to a materials control program for civilian industry uses is that it is impossible to set up any reasonable yardstick of essentiality in a period of boom.

The whole economic pace is sparked by the production and purchase of luxury products. It is essentially a luxury economy. It is impossible to justify giving one luxury industry a priority over another.

* * *

FREE MARKETS FAVORED

If the Government were to help one user to obtain materials for a non-military purpose in a period of a boom luxury market, it would be impossible to draw the line at any point.

Any diversion of materials from one industry to another would create an employment problem in those industries deprived of a free access to materials.

* * *

SMALLER BUYERS SQUEEZED

On the other side of the fence is the problem that the large, well-established buyer will get preference in obtaining materials in a scarcity market, while the smaller buyer will get badly squeezed.

These are the conditions which create gray—and later black markets. It may be too early to talk about gray and black markets when the real pressure for materials has not begun, but such markets can be expected with great scarcity—and some well-defined markers are definitely pointing to developing scarcity.

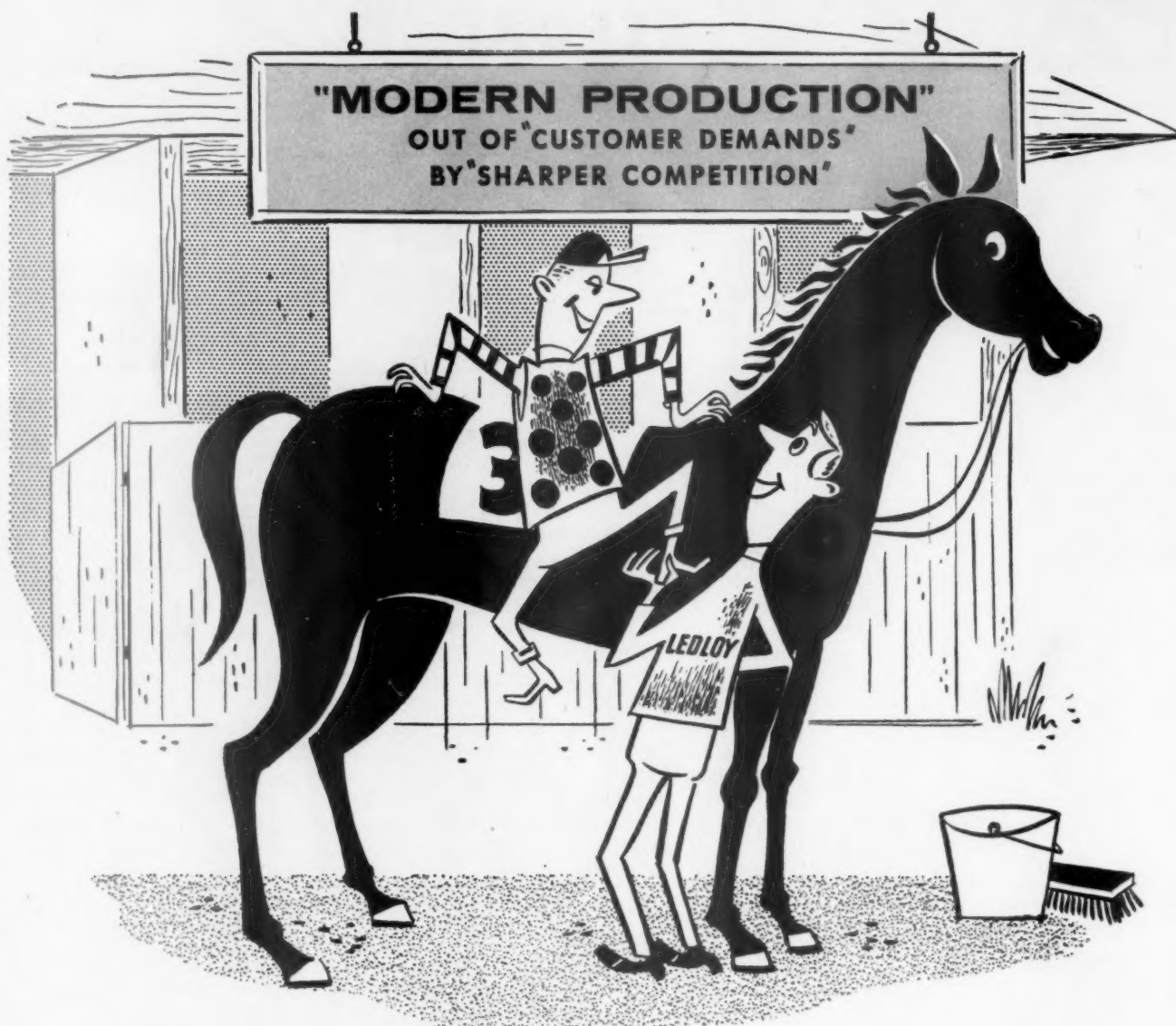
* * *

PRICE RISES AHEAD

Another paramount issue for purchasing is prices, and here the outlook seems crystal clear. For some two years, roughly ending the middle of 1955, prices remained stable.

Industry absorbed some cost increases, and compensated for others by using substitute materials and improving productivity. There was intense competition, and this kept prices down and pared down profits.

Now, the picture has been altered. The wage increases which have been tacked onto costs during the last year are being written into the price levels.



Want a "Leg Up" On Production?

If you're "left at the post" in today's race for quality production at competitive prices, better study Ledloy's* form sheet.

- Faster feeds and speeds
- Longer tool life
- Fewer production line breakdowns
- Finer finish—often eliminates final machining.



Truly a steel with "Built-in Productivity."

For proof of increased production at lower costs, try a partial run with Aristoloy Leaded Steel.

*Inland Ledloy License

COPPERWELD STEEL COMPANY • STEEL DIVISION • WARREN, OHIO

SPECIAL SERVICE FOR READERS

You will want additional information about the equipment, materials, services or methods described or advertised in this issue of PURCHASING.

As a special service, our Reader Service Department will gladly and promptly arrange to have manufacturer's literature regarding any item in this issue sent directly to you.

Two cards are provided—one for you, and one for the individual to whom you pass your copy of PURCHASING:

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READER SERVICE is a monthly feature of PURCHASING Magazine designed to help the reader get all the information needed with the minimum of time and effort.

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COMPANY _____

ADDRESS _____ CITY _____ STATE _____

Circle numbers of items described or advertised in this issue. JANUARY, 1956
(not good after 3-15-56)

1	2	3	4	5	6	7	8	9	10	251	252	253	254	255	256	257	258	259	260
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Additional information wanted

First Class

Permit No. 16734
New York, N. Y.

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NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

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PURCHASING

205 EAST 42nd STREET

NEW YORK 17, N. Y.

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241	242	243	244	245	246	247	248	249	250										

Additional information wanted

information for your

catalog files

VULCANIZERS KEEP CABLE UPKEEP DOWN

A 16-page illustrated catalog gives full particulars on a line of portable electric vulcanizers to keep cable upkeep down. Data is supplied on vulcanizing supplies, tools, molds, compounds.

Joy Mfg. Co.

Circle No. 1 on Inquiry Card—Page 17

WIRE CLOTH MADE FROM MANY METALS

Listed in a 15-page, color catalog (No. 55) are various kinds of industrial wire cloth in rolls and fabricated parts. Included are types of weaves, over 19 metals used, mesh, etc.

The Pequot Wire Cloth Co.

Circle No. 2 on Inquiry Card—Page 17

INDICATORS, GAGES, INSTRUMENTS

Bulletin No. 416 illustrates in 80 pages 140 models of dial indicators, dial gages and instruments. These include test indicators, comparators, strain gages, vibrometers, etc.

The L. S. Starrett Co.

Circle No. 3 on Inquiry Card—Page 17

POLISHING HEADS, ABRASIVE BELTS

A comprehensive account of the brush-backed polishing head in various models is contained in bulletin No. 102. An abrasive belt unit and accessories are covered in bulletin No. 104.

Grinding & Polishing Machinery Corp.

Circle No. 4 on Inquiry Card—Page 17

PRACTICAL APPLICATIONS OF VACUUM PUMPS

Printed in 2-colors, catalog No. 425 describes 50 different fields in which vacuum pumps could be used. They range from a ¼ hp unit with 2cfm to a 40 hp unit with 780 cfm displacement.

Kinney Mfg. Div., N.Y. Air Brake Co.

Circle No. 5 on Inquiry Card—Page 17

CONVEYORS WITH BETTER BEARINGS

Twenty pages of data in catalog 60A treat of a line of medium and heavy duty roller conveyors. Cutaway views show dustproof, greased-for-life plain and ball bearings.

The E. W. Buschman Co.

Circle No. 6 on Inquiry Card—Page 17

BALANCED VALVE REGULATORS

High and low pressure balanced regulators, adaptable to many special arrangements to satisfy specific control requirements, are outlined in 36-page bulletin No. 1094, full of line drawings.

Rockwell Mfg. Co.

Circle No. 7 on Inquiry Card—Page 17

USE OF ALUMINUM IN BUSWAYS

An eight-page bulletin (2-color, No. GEA-6169) describes use of aluminum bus bars in both feeder and plug-in or trolley busway distribution systems. Aluminum is shown to conduct well.

General Electric Co.

Circle No. 8 on Inquiry Card—Page 17

TABLES OF INDUSTRIAL STANDARDS

Arranged for easy reference, 112-page paper-bound volume contains selected tables useful in various industries for establishing standards. The formulae, charts and definitions are concise.

United States Testing Co., Inc.

Circle No. 9 on Inquiry Card—Page 17

MAKING PRECISION PARTS

Practically the whole current technology of precision mechanism is pictorially reviewed in a 32-page, illustrated publication. It describes facilities for making complex parts.

Hamilton Watch Co., Allied Products Div.

Circle No. 10 on Inquiry Card—Page 17

SLINGS, FITTINGS DESCRIBED

The Tuffy Sling Handbook (8½" x 11") contains 60 pages of illustrations, charts and diagrams describing 16 factory-fitted slings and 24 fittings.

Union Wire Rope Corp.

Circle No. 11 on Inquiry Card—Page 17

STEELS FOR THE ELECTRICAL INDUSTRY

A 24-page data sheet gives information and numerous graphs on Monimax (contains molybdenum) and Sinimax (contains silicon) EM-20 steels, two specialized types for use in the electrical field.

Allegheny Ludlum Steel Corp.

Circle No. 12 on Inquiry Card—Page 17

LEAD BATTERIES FOR MOTIVE POWER

The industrial cycle service is fully covered in a 48-page manual on lead batteries for all types of motive power. It includes charts, photos, tables, repair & maintenance hints.

C & D Batteries, Inc.

Circle No. 13 on Inquiry Card—Page 17

WHERE TO USE LIMIT SWITCHES

Bulletin GEA-6131A (8-pages, two colors) contains application information, product ratings and dimensions on a line of lever and rotating cam type limit switches for varied purposes.

General Electric

Circle No. 14 on Inquiry Card—Page 17

CARBON & STEEL ALLOY TUBING

Four major classifications of carbon and alloy steel tubing—mechanical, pressure, airframe, and aircraft mechanical—are described in an 8-page catalog. Also covered is tube fabricating.

Copperweld Steel Co., Ohio Seamless Tube Div.

Circle No. 15 on Inquiry Card—Page 17

ADVANTAGES OF REINFORCED PLASTIC

A fully illustrated, 2-color reference manual covers the advantages, applications and procedures for using "Scotchply," the first formable reinforced plastic sheeting for structural jobs.

Minnesota Mining & Mfg. Co.

Circle No. 16 on Inquiry Card—Page 17

SAWS FOR CUTTING ALL TYPE MATERIALS

A 60-page, 8½ x 11 catalog describes and illustrates a complete line of hacksaws, band saws and band knives. It includes illustrations applications and reference tables on all types.

The L. S. Starrett Co.

Circle No. 17 on Inquiry Card—Page 17

AUTOMATIC FEEDERS TO SPEED PRODUCTION

Elevating, blade rotary and vibratory feeders which, with accessory conveyors, make machine tools fully automatic, are dealt with in a 2-color illustrated brochure. They handle symmetrical parts.

Feedall Inc.

Circle No. 18 on Inquiry Card—Page 17

MILLS, COUNTERBORES, HOBS STOCKED

Catalog No. 18-C details in 52 illustrated pages a line of milling cutters, end mills, counterbores and hobs stock-fabricated. Full specifications are supplied with hints on ordering.

National Twist Drill & Tool Co.

Circle No. 19 on Inquiry Card—Page 17

WHEN TO USE WHAT HEATING ELEMENT

Profusely illustrated, a 28-page booklet, No. EC-53, is designed for the convenient selection of electric heating elements suited to equipment or a product. Unique data charts aid selection.

Cutler-Hammer Inc.

Circle No. 20 on Inquiry Card—Page 17

RECTIFIER DESIGN FACTORS

A 12-page "Selenium Rectifier Design Data Guide" gives factors to be considered in designing industrial and military rectifiers and explains their importance. Rectifiers are listed.

Federal Telephone & Radio Co.

Circle No. 21 on Inquiry Card—Page 17

POSITIONERS POWER-CONTROL LOADS

Pneumatic power positioners that drive valves, dampers or other devices to provide the "muscles" for thousands of exacting control loads in every industry form text of File Folder TP-MFI.

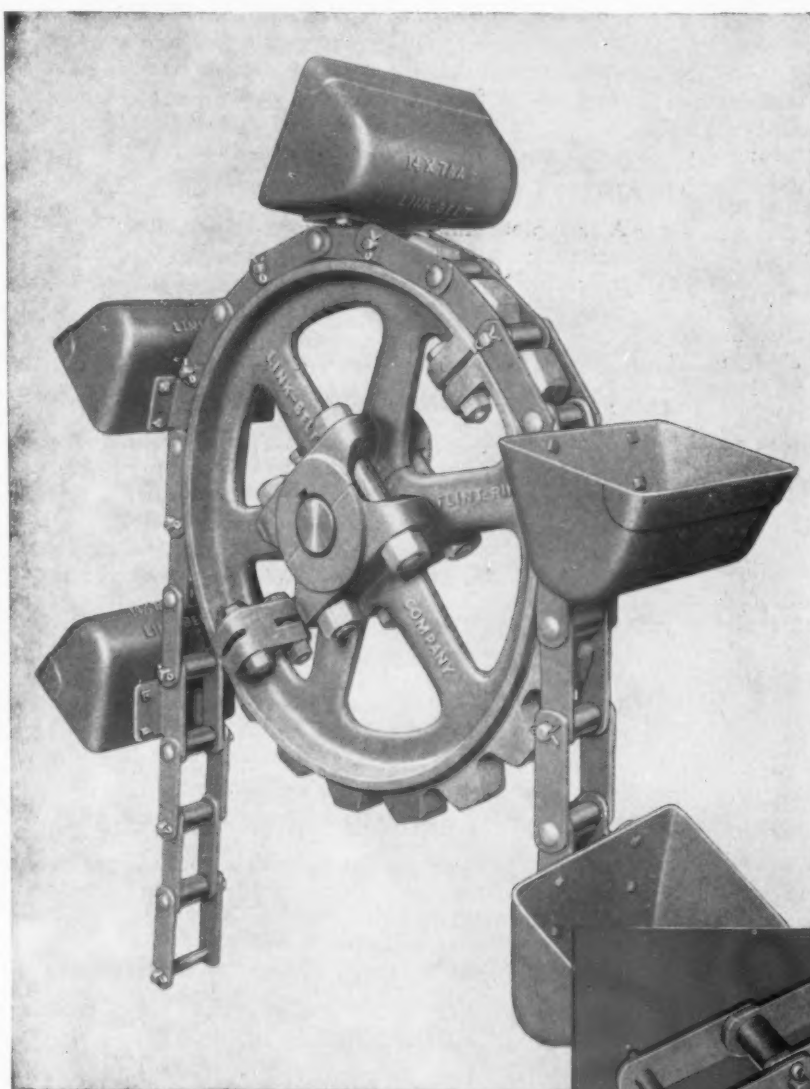
Hagan Corp.

Circle No. 22 on Inquiry Card—Page 17

**Circle Card Opposite Page 17
to Obtain These Catalogs
Additional Catalogs on Page 20**

4 times the life... 1/4 the maintenance

through proper selection of LINK-BELT chain



Bucket elevator at fertilizer plant proves advantage of choosing from this complete line

Often there's no need to go to excessively costly cast special alloy chains to get long life. Here's proof: In an Indianapolis fertilizer plant, Link-Belt SS-111 bushed chain (left) handled an average of 75,000 to 80,000 tons of fertilizer before requiring replacement. The previous type of chain had to be replaced after handling 18,000 tons.

This installation is an example of the efficiency and economy that can be gained by applying the one chain best suited to specific conditions from the complete Link-Belt line. Remember, no other single source offers you such a broad range of roller, silent, cast, combination, forged and fabricated chains . . . with matching sprockets.

A call to your nearby Link-Belt office or authorized stock-carrying distributor will bring you all the facts about the complete line of Link-Belt chains and sprockets.

Under severely corrosive conditions, Link-Belt SS chain on bucket elevator of this type in fertilizer plant handled 80,000 tons, to previous chain's 18,000.

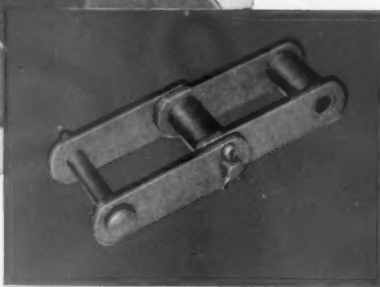
Looking for the *best*
chain for a specific
need? Link-Belt makes
the *complete line*.

LINK-BELT

CHAINS AND SPROCKETS

LINK-BELT COMPANY: Executive Offices, 307 N. Michigan Ave., Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office: New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.

13,910



800 Ley
bushed chain



Class C
combination chain



LXS steel
chain



"Flint-Rim"
cast sprockets

catalog files

ALUMINUM PIPE FOR EVERY PURPOSE

Characteristics and advantages of aluminum pipe for conveying everything from air to acid are presented in a 2-color, 18-page booklet. Each major field of application is covered in detail.

Aluminum Co. of America

Circle No. 23 on Inquiry Card—Page 17

DO YOU BUY RUBBER PARTS?

Molded and extruded rubber products are covered in a Rubber Engineering Data Book. A section details technical specifications and relative properties of natural and various synthetic rubbers.

Tyler Rubber Co. Industrial Div.

Circle No. 24 on Inquiry Card—Page 17

POWER TOOLS FOR VARIOUS MATERIALS

A 51-page catalog lists power tools for cutting, shaping, drilling, and finishing wood, metal, fiber and plastics. Illustrated, it describes jointers, planers, arbor saws, sanders, etc.

Boice-Crane Co.

Circle No. 25 on Inquiry Card—Page 17

INDUSTRIAL DIAMOND TOOLS DESCRIBED

Illustrations and tool specifications covering diamond tool and thread grinding dressers, and center cones form text of catalog titled "Diamond Dressers." Hints are given on wheel dressing.

Diamond Products, Inc.

Circle No. 26 on Inquiry Card—Page 17

METAL RACEWAYS, FITTINGS

Illustrated and described in a 132-page catalog and wiring guide is a complete line of metal raceways and fittings. Detailed instructions are supplied for installing all sizes.

The Wiremold Co.

Circle No. 27 on Inquiry Card—Page 17

SPEEDING CAN PRODUCTION

A complete line of flanging, beading and thread rolling machinery for medium and high speed can-making lines is covered in a 20-page catalog. Many types of automatic machines are listed.

E. W. Bliss Co.

Circle No. 28 on Inquiry Card—Page 17

CUTTING MACHINE ENLARGES PLANT PRODUCTION

Catalog 8048, fully illustrated, describes in 12 pages the "Oxygraph" multiple torch gas cutting machine. It cuts an unlimited variety of shapes from steel plates, slabs, forgings.

Air Reduction Sales Co.

Circle No. 29 on Inquiry Card—Page 17

HIGH TEMPERATURE USES OF MOLYBDENUM

A complete picture is provided in a 72 page booklet of the present high temperature applications of molybdenum and possible uses in future such as in turbine blading, due to 4750 F melt point.

Climax Molybdenum Co.

Circle No. 30 on Inquiry Card—Page 17

VULCANIZED FIBRE IN INDUSTRY

A 20-page, copiously illustrated brochure gives a clear view of the innumerable possible uses of vulcanized fibre in industry. Its properties and methods of fabrication are given.

National Vulcanized Fibre Co.

Circle No. 31 on Inquiry Card—Page 17

STAINLESS FASTENINGS FROM STOCK

A complete line of all types of stainless steel fastenings available "right-off-the-shelf" is listed in catalog No. 55A. It includes most types of screws, nuts, washers and pipe fittings.

Star Stainless Screw Co.

Circle No. 32 on Inquiry Card—Page 17

ALL TYPES OF STAINLESS FASTENERS

A new two-color 52 page stainless fastener data book covers forty basic fastening devices. Also covered are specifications, engineering data, properties, applications, etc.

Allmetal Screw Products Co.

Circle No. 33 on Inquiry Card—Page 17

HYDRAULIC & AIR-DRIVEN COMPONENTS

Catalog No. 555 lists a complete line of hydraulic and air driven units for any type of lifting, pushing, or pulling job. Included are pumps, cylinders, rams, foot lifts, jacks, etc.

Star Jack Co., Inc.

Circle No. 34 on Inquiry Card—Page 17

WELDLESS STEEL RINGS IMPROVE PRODUCTS

Design advantages and cost-cutting applications of forged weldless steel rings and flanges in industrial processing equipment and machinery are discussed in 12-page bulletin No. 10,000.

Baldwin-Lima-Hamilton Corp., Standard Steel Works Div.

Circle No. 35 on Inquiry Card—Page 17

HOW TO SELECT CLEANING MACHINES, MATERIALS

Manual No. 10,000-G, containing 100 illustrations, shows various types of industrial cleaning machines and supplies technical material to help plants select best material and machines.

Magnus Chemical Co., Inc.

Circle No. 36 on Inquiry Card—Page 17

**Circle Inquiry Card Opposite Page 17
to Obtain These Catalogs**



Inside story:

Valves may look alike on the surface. Their performance is another story. And the inside story of Powell Valves is that *every* Powell Valve has *Performance Verified*.

X-ray and gamma ray inspection—examining the very structure of the metal itself—are two of the many ways that Powell can make absolutely certain that Powell Valves will give *dependable* flow control.

Every part of every valve must pass rigid inspection. As a final step in manu-

facture, every Powell Valve is subjected to *an actual line test*. Because of Powell's pains-taking quality control, valve repair is cut to the minimum and plant shut down through valve failure is substantially reduced. Records from refineries, power and industrial plants the world over prove it.

Consult your Powell Valve distributor. If none is near you, we'll be pleased to tell you about our **COMPLETE quality line** which has **PERFORMANCE VERIFIED**.

The Wm. Powell Company, Cincinnati 22, Ohio . . . 110th YEAR

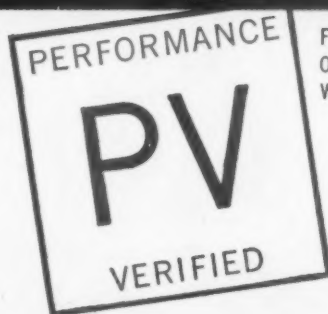


FIG. 1793—Iron Body Bronze Mounted O. S. & Y. Gate Valve for 125 Pounds W.S.P.



FIG. 2608—Bronze Full Flow Globe Valve for 200 Pounds W.S.P.



FIG. 2491—Stainless Steel O.S. & Y. Gate Valve for 150 Pounds W.P.



POWELL VALVES

BRONZE, IRON, STEEL AND CORROSION RESISTANT VALVES.

For More Information Circle No. 167 on Inquiry Card—Page 17

suppliers

in the news

Personnel changes affecting top posts in four district sales offices have been announced by **Jones & Laughlin Steel Corp., Pittsburgh.** Richard G. Carney, formerly in Chicago, is now district sales manager at St. Louis. Chester M. Kuhns has moved from St. Louis to become district sales manager at Cleveland. The new district sales manager in Columbus is Alfred C. Pollock, formerly at Kansas City. And, Robert B. Clark, a salesman in Chicago, is now assistant district sales manager in Chicago.

American Hoist & Derrick Co., St. Paul, Minn., has named G. O. Britton as manager of distributor sales. He will handle sales for the company's line of crawler and truck mounted cranes and excavators, as well as hoists and derricks.



G. O. Britton

Tube Reducing Corp., Wallington, N.J., has organized its sales department into three divisions. C. L. Megargle, presently assistant sales manager, is also manager of the new Specialty Tube Sales Division. In the Bearing Tube Sales Division, Byron C. Hague has been made manager. Finally, T. L. Lee has been appointed manager of the new Rockdrawn Tube Sales Division.

National Rubber Machinery Co., Akron, has opened offices in Chicago to increase sales engineering service in the area. William G. Potts has been named as district manager of the new office.

The new assistant sales manager of **Lewis-Shepard Products, Inc., Watertown, Mass.,** is Clement N. Williams.



C. N. Williams

D. Frank Mederos has been made vice president and assistant to the president of **Walworth Co., New York,** manufacturers of valves and pipe fittings.

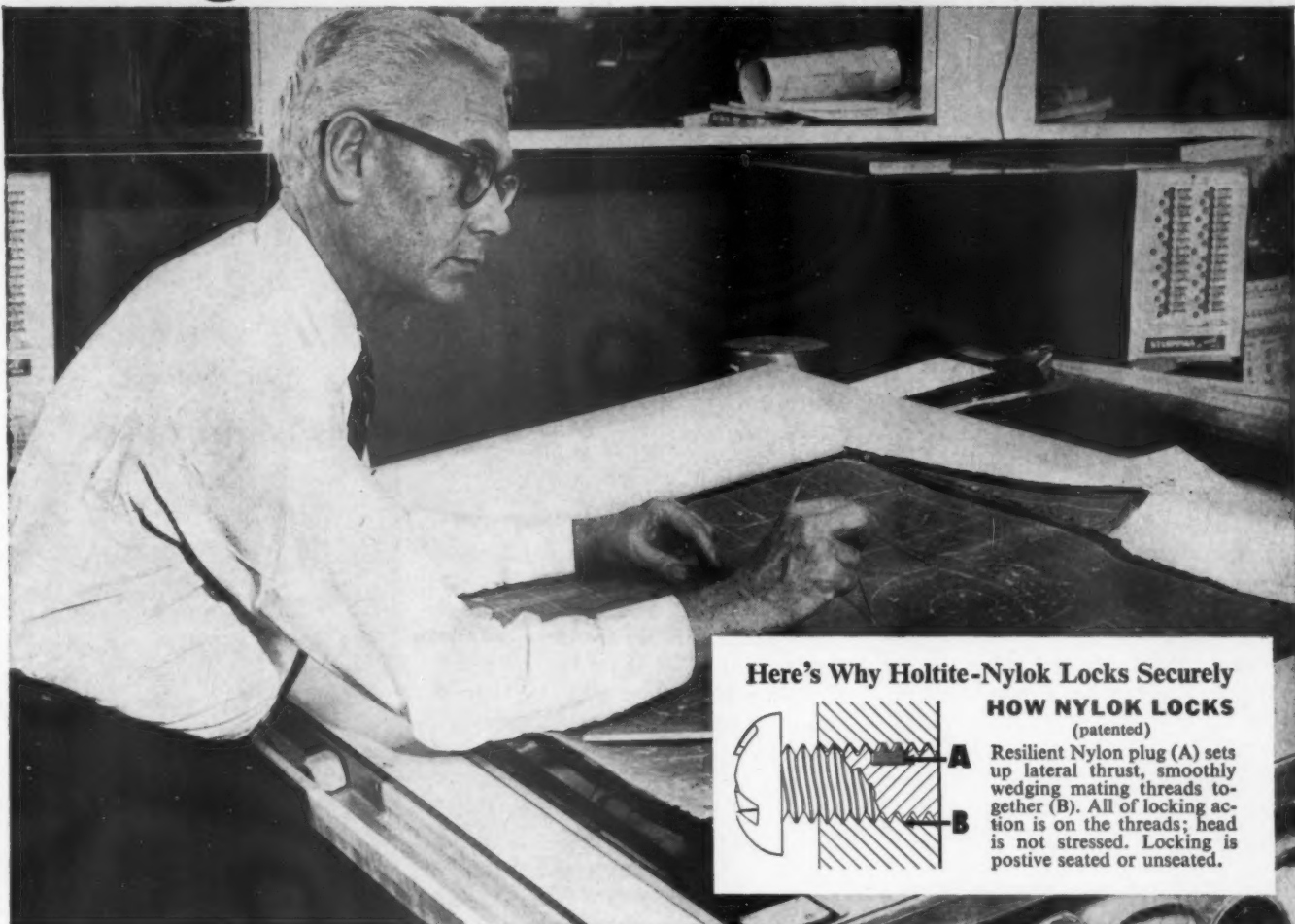
The formation of a new sales district has been announced by **Construction Materials Division, General Electric Co., Bridgeport, Conn.** Called the Mid States district it covers Cincinnati, Dayton, and Columbus, Ohio; Indianapolis and the entire southern half of Indiana; Charleston and Parkersburg, W. Va.; and Kentucky. Linvill L. Young has been named manager of the new district.

Eastern Brass and Copper Co., New York, has appointed William J. Senter as sales manager. He will direct sales activities in New York, New Jersey and New England.



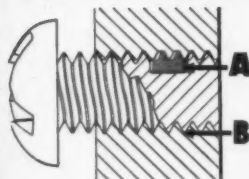
W. J. Senter

The Engineer from Continental Screw Co. ...



Here's Why Holtite-Nylok Locks Securely

HOW NYLOK LOCKS (patented)



Resilient Nylon plug (A) sets up lateral thrust, smoothly wedging mating threads together (B). All of locking action is on the threads; head is not stressed. Locking is positive seated or unseated.

...will study your specific requirements for Holtite Nylok Screws at no cost to you!

**Talk to the Engineer from Continental
about 1-piece self-locking screws and bolts**

Manufacturers all over the nation are saving time and money by switching to Holtite Nylok Screws. These amazing self-locking screws and bolts eliminate safety wire, lock washers, jam nuts, and various other locking devices.

The secret behind their smooth efficiency is a nylon insert in the threaded section which provides a positive-locking action. Seated or unseated, they lock where they stop. Our engineers will be happy to study your specific requirements and make the correct recommendations *at no cost to your company.*

Remember, Holtite Nylok Screws and Bolts give you these advantages:

- | | |
|---|--|
| 1. Positive locking | 7. Defies vibration |
| 2. One piece; eliminates separate auxiliary parts | 8. No harm to mating threads of parts |
| 3. Readily replaced | 9. Acts as a seal for gases and liquids under high pressures |
| 4. Interchangeable | 10. Locks where it stops |
| 5. Re-usable | |
| 6. Locks seated or unseated | |

It will pay you to talk over your fastener problems with the Continental Engineers.

Only Continental Engineers Are Required To Have This Training

Each engineer at Continental is required to undergo thorough experience producing ground thread taps and gages, with their exacting screw thread dimensions. This special training is passed on to you—at no extra cost.



You Can Always Count on Continental
Continental Screw Co.

Manufacturers of Holtite Fastenings
New Bedford, Massachusetts, U.S.A.

suppliers

Aeroquip Corp., Jackson, Mich., has made **Kent R. Manning** general manager of the Jackson division. He will be responsible for sales and manufacturing of all aircraft products made up by the division, including **Elbeeco, Inc.,** a subsidiary.

William W. Ogren is now general sales manager of the **Penco Metal Products Division, Alan Wood Steel Co., Conshohocken, Pa.**

Bruce D. Henderson has been named operating vice president and division manager in charge of the air conditioning division of the **Westinghouse Electric Corp., Pittsburgh.** Mr. Henderson has been vice president in charge of purchasing and traffic.

Three new distributors have been appointed by **The Polymer Corp. of Pennsylvania, Reading.** **Bearings, Inc.,** Cleveland and Indianapolis, will cover Ohio, Indiana, Pennsylvania, West Virginia, New Jersey and Kentucky. A subsidiary, **Dixie Bearing Co., Atlanta,** will handle the southeastern and southwestern states. And, **Delta Products Division, Air Accessories, Inc., Fort Worth,** will cover northern Texas.

Joseph M. Murphy has been appointed special production representative of the **Container Division, Robert Gair Co., Inc., New York.**

Additional "Suppliers in the News" will be found following the Industrial Development section

The H. M. Harper Co., Morton Grove, Ill., has announced two appointments. **R. N. Hillner** is now manager of standard product sales. He will take charge of all standard products in bolts, nuts, screws, washers, rivets, etc. **John A. Stevenson** is manager of technical sales. He will handle specialty engineering products including fastenings of titanium and high temperature metals of Harper's Aero Division.

The new general sales manager of **Pesco Products Division, Borg-Warner Corp., Chicago,** is **Donald R. Spotz.**

Five new pump distributors have been announced by **Ampco Metal, Inc., Milwaukee.** They are: **Will Process Equipment Corp.,** Rochester, N. Y.; **The Conduit Co.,** Tulsa; **A-L Machine and Equipment Co.,** Franklin Park, Ill.; **Rawdon Myers Agency,** Cincinnati; and **Paul B. Duggan,** Chicago.

The Cleveland Vibrator Co., Cleveland, maker of electric and pneumatic vibrating equipment, has named **Gilbert R. Stocum** as sales engineer for Illinois.

Specialties, Inc., Alexandria, Va., has been made a franchised distributor of **Parker synthetic rubber-o-rings** for sealing applications by **Parker Appliance Co., Cleveland.**

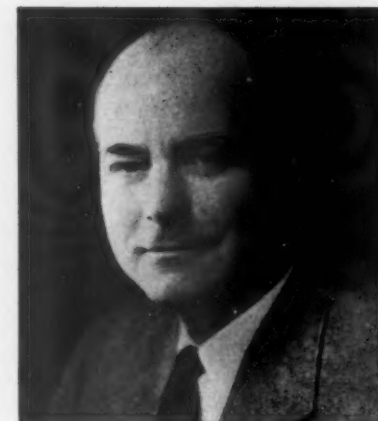
Whitney Blake Co., New Haven, Conn., has named **Edward J. Horelik** as assistant sales manager of their **Electronics Division.** The division makes connectors for electrical, electronic and aircraft circuits.

David W. Armstrong has been appointed manager of the new **Kansas City, Mo.,** district sales office of the **Fuller Co., Catasauqua, Pa.**

Robert M. Gordon, formerly sales manager of the **Air Impeller Division** of the **Torrington Mfg. Co.,** is now general sales manager for **Milford Rivet & Machine Co., Milford, Conn.**



R. M. Gordon



J. E. Johnson

John E. Johnson is now director of sales for the **Datamatic Corp.,** owned jointly by **Minneapolis-Honeywell Regulator Co.** and **Raytheon Mfg. Co.**



R. W. Bruins

Robert W. Bruins has been named to the newly created post of manager of handler sales for **The Colson Corp., Elyria, Ohio.**

For More Information Circle No. 169 on Inquiry Card—Page 17→

it pays to see VICTOR



PHOSPHATES

MAKE WATER WORK BETTER



Of all the elements placed at the disposal of man, none is more widely used in manufacturing processes than water. But sometimes water possesses minerals which impair its ability to work at top efficiency. Throughout industry, Victor phosphates are used to make water work better. Cement manufacturers increase production and realize lower costs by adding a sodium phosphate to the raw slurry — less water is required and pumpability improved. Added to boiler water, sodium phosphates prevent costly scale . . . and Victor sodium tripolyphosphate is most effective as a builder in detergents and soaps.

Write for the Victafile listed on the back page that tells how Victor chemicals are used in *your* industry. *It Pays* to see Victor.

AND THE GREEN GRASS GREW...



Liquid fertilizer solutions give roots a hearty meal. These solutions are easily applied, and produce a sturdy, healthy growth of all plants and grasses because nitrogen, phosphorus, and potash are present in a readily available form. Today, many formulators specify one or more of Victor's ammonium phosphates, potassium phosphates, or phosphoric acids, for the preparation of liquid or dry concentrates.

Fertilizer manufacturers and formulators are invited to send for the Victafile and complete data on this new development. *It Pays* to see Victor.

BRUSH YOUR TEETH WITH PHOSPHATE?



Sure you do . . . because Victor calcium phosphates are important polishing agents in many of today's leading dentifrices. These pure, tasteless phosphates are manufactured to meet exacting specifications. They are soft enough to polish brilliantly and at the same time clean teeth effectively. Victor offers a complete line of dentifrice grade calcium phosphates, and our technical service department will be glad to help you select the best one for your needs.

Victor produces phosphates of exceptionally high purity and many of them also comply with USP and NF specifications. They are included in various Victafiles listed on the back page. *It Pays* to see Victor!



PATTY BAKES A CAKE

With today's easy-to-use prepared cake mixes, even mother's little helper can bake an outstanding cake. Cake baking is no longer a "trick" . . . because modern mix-makers select Victor phosphates for the leavening. The "phosphate" is the determining factor in producing a cake with good volume, fine texture, and excellent flavor. And, it is also of major importance in the shelf-life of the mix. That's why most of the leading mixes contain one or more Victor phosphates.

For information on a variety of phosphates that solve leavening problems, send for the new Victafile from the list on the back page. *It Pays to see Victor!*

VICTOR CHEMICAL WORKS

155 NORTH WACKER DRIVE • CHICAGO 6, ILLINOIS

New facts about

Victor Chemicals for

your industry

Here's a brand-new concept in chemical literature that's tailor-made for *your* industry. Each Victafile contains complete data on Victor phosphates, formates, and oxalates used in *your* industry. In simple, concise form, each Victafile provides important technical information on the Victor chemicals you can use to cut costs, increase production, or add sales appeal.

Send for your copy of the Victafile edited especially for *your* industry. Just circle the number of the Victafile you want, clip the coupon to your letterhead and mail it today.

SELECT THE VICTAFILE FOR YOUR INDUSTRY

- | | |
|--|--------------------------------------|
| 1. Agriculture | 9. Leather Tanning |
| 2. Chemical Manufacturing | 10. Metal Finishing and Rustproofing |
| 3. Dentrifices | 11. Mining and Drilling |
| 4. Detergents and Soap | 12. Paints |
| 5. Flameproofing | 13. Petroleum Products |
| 6. Food and Beverages | 14. Pharmaceuticals |
| 7. Glass, Ceramics and Vitreous Finishes | 15. Plastics |
| 8. Industrial and Household Cleaners | 16. Pulp and Paper |
| | 17. Textiles |
| | 18. Water Treatment |



Victor Chemical Works
155 N. Wacker Drive
Chicago 6, Illinois

Please send the Victafile for our industry circled below:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

COMPANY _____

ADDRESS _____


CITY _____ STATE _____

ATTENTION _____

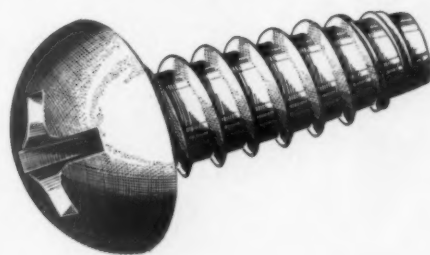
Please send sample of Victor _____

- ☐ We have a particular problem; if there's no obligation, please have technical service representative call.

V **VICTOR**
Dependable Name in
Chemicals
for 57 Years



*Here's one feature all
1956 cars have in common
...thanks to AMERICAN*



Any auto show will quickly show you a "familiar face", literally millions of times over . . . the good-looking, unmarred head of the *Phillips* cross-recessed Screw. For it's a matter of record that, since American first introduced the Phillips Screw to industry, auto makers have come to use more and more of these modern fasteners until now most of the industry is standardized on Phillips . . . as one look at your own car will tell you.

And why has Phillips fastening been so widely adopted in the world's most cost-conscious, competitive industry? Ease of handling . . . speed and straightness of driving . . . unscarred work-surfaces, uninjured workers, no rejected work, no lost time. In fact, time savings overall run up to 50%. So the auto industry knows that *Phillips Screws* always cost least to use.

And many auto makers bank on American to keep their assemblies rolling without a hitch. For they know that American has the volume capacity and the inflexible inspection systems that assure prompt delivery of top-quality Phillips fasteners of any type, size or metal. Likewise, you can get fastener problems off your mind once for all . . . just turn them over to American.

✕ marks the spot . . . the mark of extra quality

AMERICAN SCREW CO.

PHILLIPS HEADquarters
WILLIMANTIC, CONNECTICUT

Plants at Willimantic, Conn. and at Norristown, Pa.
Warehouse and office at Chicago
Office, Detroit, Michigan



For More Information Circle No. 170 on Inquiry Card—Page 17

ULBRICH
Stainless Steels

THIN GAUGE

The **BIGGEST** Little
Converting Mill
in the Country

EDGE ROLLING

Specialists in small
orders—a foot or
a pound and up

SLITTING

STRIP-Flat Wire
converted
to your exact
requirements

Complete Inventory—
Delivery from Stock

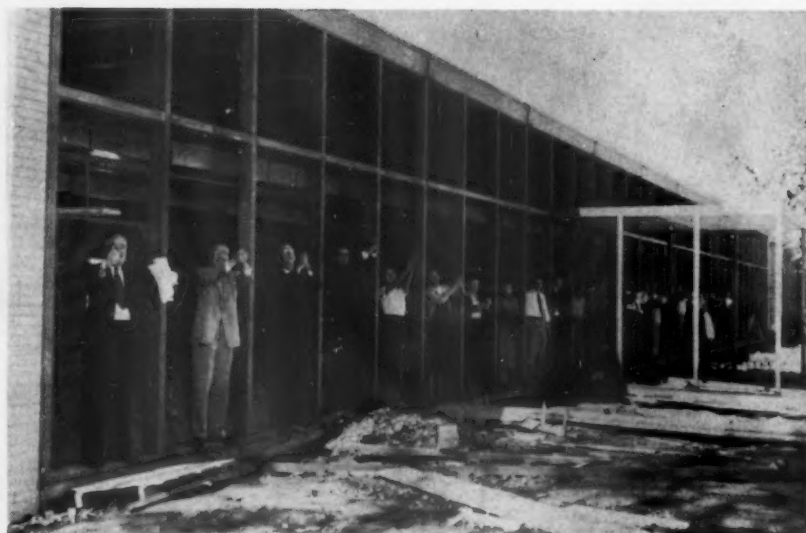
Certified
ANALYSED
for all grades
of stainless steel

ULBRICH
Stainless Steels
Established 1924
WALLINGFORD • CONN.
Wallingford Colony 9-7771

For More Information Circle No. 171
on Inquiry Card—Page 17

f.o.b.

• • **filosofy of buying**



INSTANCES of salesmen going over the head of the purchasing agent to get an order are legion. The photo above is probably unique in that it shows buyers going "over the heads" of suppliers in order to get what they need.

The scene is the new, modern office building of The Wakefield Company at Vermilion, Ohio, half completed. Construction had gone smoothly on schedule, until one critical point was reached and the project came to a stop. No glass! And glass, lots of it, was a very important part of the design. After P. A. Leroy S. Grant (4th from the left) had made countless telephone calls and several trips to suppliers, all to no avail, he decided to go over the heads of manufacturers and distributors. So he lined up the whole executive and office staff in the gaping, empty sash spaces of the

building they hoped to occupy, to pray for glass to complete the building.

Demand for glass continues to show great vitality despite today's unprecedented use of plastic materials in applications where glass formerly reigned supreme. The Wakefield Company itself has installed more than a million square feet of acrylic and vinyl plastics in multi-functional electrical ceilings that provide light, noise control, air distribution and other services in modern commercial buildings. But they need a lot of glass for their own offices, and at the time of this writing they haven't yet found it.

IN TUNE with the times, one of the big New York stock brokerage firms (whose slogan

is "Today's methods for today's markets") is offering its customers a Do-It-Yourself Research Kit. Old stuff for purchasing agents. Although the information and facilities for research have improved tremendously over the years, they have long known—and still know—that the only way to put those tools effectively to work is Do-It-Yourself.

REPORTING on new applications for stainless steel, Allegheny Ludlum's *Steel Horizons* notes that the currency of the Republic of Costa Rica is now being made of stainless steel, and shows the photograph of a shiny new minted coin to prove it. However, enterprising fabricators are not advised to get into this field, for the U. S. Mint has exclusive rights. When is a nickel not a nickel? When it's made of stainless steel.

SWEET'S "Marketing Memo No. 22" reports on a research study made by *Newsweek Magazine* on "Selling the Industrial Market Today." There's a back-handed tribute to purchasing listed among the six major obstacles facing industrial salesmanship. Obstacle No. 6 is: "Overcoming Industry's Established Buying Practices . . . As in production, a major determinant in purchasing is control of costs . . . Such control, however, requires tightly organized and controlled buying procedures. These procedures, while adding to the efficiency of the buying function, seriously impair the salesman's scope of operations . . . the salesman's freedom of action in seeking out impending needs and transmitting product information to important buyers has been seriously limited."

"It is also interesting," the report continues, "to note in several instances discrepancies between the buyer's version and the salesman's version of how the order developed and was consummated."

JANUARY, 1956

SPECIAL WIRE CLOTH PARTS



- STRAINERS
- GASKETS
- ARRESTORS

- FILTERS
- SHIELDS
- BARRIERS

- TRAPS
- GUARDS
- SCREENS

Just to name a few . . . and most of the parts we are making to special order don't really have a name! Our real specialty is fabricated wire cloth parts, made to your specifications.

Any metal, almost any size, almost any shape . . . we can probably assemble it for you . . . faster, better and at a lower cost, than you can do it yourself.

For more information, just send for our latest Fabricated Parts Catalog.



Newark Wire Cloth COMPANY

351 VERONA AVENUE • NEWARK 4, NEW JERSEY
For More Information Circle No. 172 on Inquiry Card—Page 17



"It Really Made Me THINK!"

"The other day when the Detrex man was in to see me, he dropped a couple pieces of information that really made me stop and think. The first thing he pointed out was that metalworking and surface preparation account for $\frac{1}{4}$ to $\frac{1}{3}$ of all the operations in the average metalworking plant. That started the gears rolling. If this was true in our plant, here was a good spot to realize some important dollar savings.

"Well, after finding that 30% of our operations were in metal cleaning and surface preparation, I knew

this was the spot to cut some costs . . . and no better way to start than by talking to a technician from Detrex. After all, they make a complete line of chemicals for metal cleaning and surface preparation—as well as the equipment too.

"To make a long story short, the Detrex technician surveyed our plant and came up with several cost-cutting suggestions that were pretty important to us. You know, I bet he could do the same thing for you in your plant. You don't even have to take the time to make the survey. I found out he will do

it for you and it won't cost you a cent. Most likely you, too, will realize some important savings as a result of the survey. Talk to the Detrex technician about it the next time he calls, or write direct to their main office if you wish."

Service with a Saving!



DETREX CORP.

Dept. 612 • Box 501 • Detroit 32, Mich.

DEGREASERS • DEGREASING SOLVENTS • WASHERS
ALKALI & EMULSION CLEANERS • DRYCLEANING
EQUIPMENT • PHOSPHATE COATING PROCESSES

Phosphate Coating

Detrex zinc phosphate coatings provide a permanent, rust-resisting surface and at the same time bonds the paint finish to the metal. Paint peeling and flaking are retarded, corrosion from moisture is prevented. Phosphate coatings can be economically applied by either immersion or spray methods.

Emulsion Cleaners

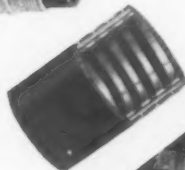
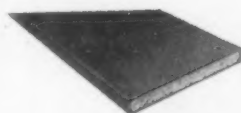
Detrex emulsions clean metal and retard rust in one operation. Once metal parts have been cleaned with Detrex Emulsion Cleaners rust will not attack them. Because they will not attack any known metal or alloy, Detrex Emulsion Cleaners offer greater flexibility. Temperatures, concentrates and chemicals can be tailored to your specific cleaning needs.

Degreasing Solvent

Detrex Perm-A-Clor has superior stability and resists break-down into sludge or corrosive acid. Thus, Perm-A-Clor assures trouble-free, continuous production. Eliminates costly shut-downs for replacement of spoiled solvent, clean-out of sludge and neutralizing of cleaning equipment.

Here's why
it pays to order
rubber products from

your **Quaker**
distributor



BELTING

Conveyor, Transmission or V-Belting.

HOSE

For air, water, steam, oil, suction, welding.

PACKING

Chute lining, duck and rubber packing, hydraulic packing, press pads, sheet packing.

GASKETS-MATting

**MOULDED AND
EXTRUDED RUBBER
PRODUCTS**

• **PROVED PRODUCTS** Your Quaker—Quaker Pioneer distributor carries rubber products with a proven 'on-the-job' record of trouble-free performance—products that give you more mileage per dollar outlay for belting, hose, packing, etc.

• **PROMPT SERVICE** You can count on prompt delivery from your distributor. His large varied stocks include all standard items for your everyday needs. For your custom-made requirements, your distributor has Quakers' manufacturing facilities at his command for fast service to you.

• **SIMPLIFIED PURCHASING** As a single source for *all* your industrial rubber needs, your Quaker—Quaker Pioneer distributor can save you multiple requisitioning, follow-up shipments—and other costs of doing business with a number of sources.

• **TECHNICAL AID** For your particularly difficult problems, your distributor can bring you the assistance of Quakers' technical experts. Consultation is free—and may reveal new economies for you.

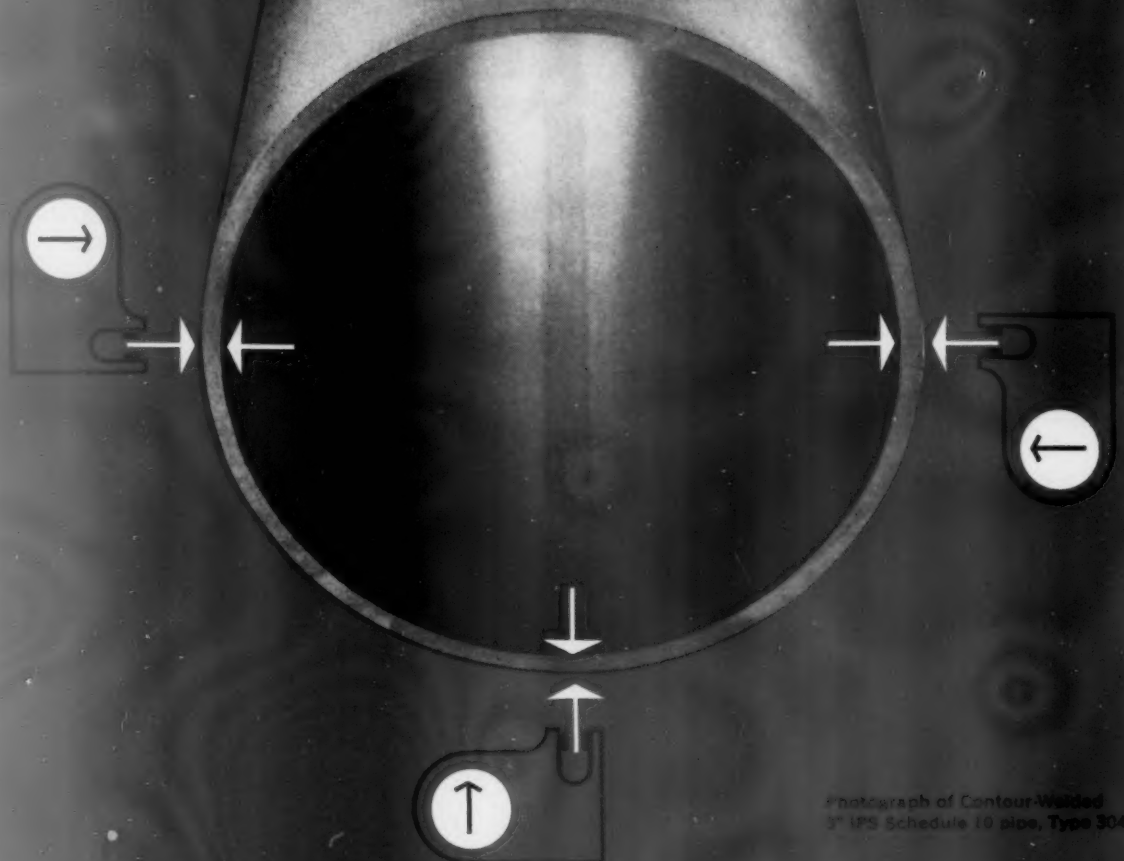
DIVISIONS OF
HKP
H. K. PORTER COMPANY, INC.

H. K. PORTER COMPANY, INC.
QUAKER RUBBER DIVISION
Philadelphia 24, Pa.
QUAKER PIONEER RUBBER DIVISION
San Francisco 7, California

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JANUARY, 1956

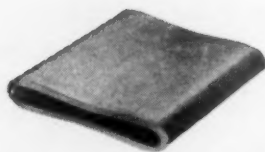
at last
really uniform



Photograph of Contour-Welded
 3" IPS Schedule 10 pipe, Type 304

CONTOUR-WELD PIPE...BEST BY ANY TEST YOU CAN NAME

Flattening



Reverse Bend ($2\frac{3}{8}$ " O.D. X .154 Wall)



Flare and Flange



Pressure (Tubing)



stainless pipe

...by Trent's new Contour-Weld process

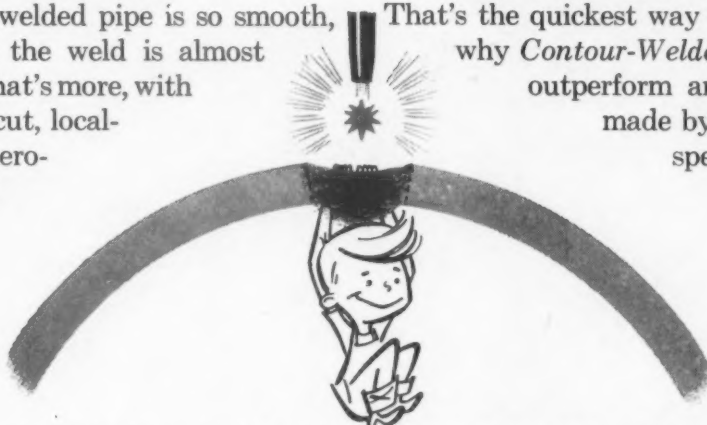
Trent's new, patented *Contour-Welded*® stainless pipe and tubing gives you all the uniformity of wall thickness you'd expect in welded pipe and tubing — plus equal uniformity in the weld zone itself.

This new-type welded pipe is so smooth, so uniform, that the weld is almost imperceptible. What's more, with no bead or undercut, localized corrosion or erosion is eliminated

... physical properties are better than those of any other pipe, welded or not.

But try Trent's new *Contour-Welded* pipe or tubing yourself. As a matter of fact, ask for a sample — and give it any test you like.

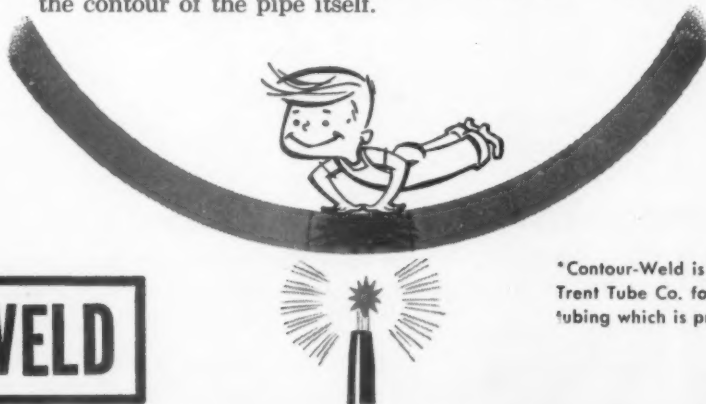
That's the quickest way to see for yourself why *Contour-Welded* pipe and tubing outperform any other. And it's made by Trent — tube mill specialists.



Normally, in producing welded pipe, the weld is made at the top. But gravity plays a nasty trick. It tugs at the fluid metal in the weld zone, pulling it down toward the middle of the pipe. The result, particularly in the heavier gages, is a perceptible bulge where it hurts the most—right on the I.D. surface. If you try to get rid of the bulge—at fair cost—the metal is undercut—and corrosion and erosion start there.

Why Trent's Exclusive Contour-Weld Process Means Smoother Welds...

But Trent put a stop to that—simply by going into partnership with gravity. With their exclusive *Contour-Welding* process, they weld at the bottom—and gravity works for them. For then, the bulge is in the opposite direction—blending in perfectly with the contour of the pipe itself.



TRENTWELD

*Contour-Weld is the trade mark of the Trent Tube Co. for its process of welding pipe and tubing which is protected under U.S. Patent 2,716,692.

STAINLESS STEEL TUBING

TRENT TUBE COMPANY, GENERAL SALES OFFICES, EAST TROY, WISCONSIN (Subsidiary of CRUCIBLE STEEL COMPANY OF AMERICA)

For More Information Circle No. 175 on Inquiry Card—Page 17

JANUARY, 1956

Truck rolls over...



Crush proof container. Here's the Gair container that brought White Echo depth sounders through truck smash-up without a scratch.

but Gair containers save fragile electronic depth sounders!

These are the facts — straight from Tom Crotty, factory manager, Wilfrid O. White & Sons, Inc., Boston manufacturer of navigational instruments:

"Nineteen White Echo depth sounders, packed individually in Gair-designed containers, were ticketed for anxious customers in New York. The truck was involved in a serious accident. Most of the cargo was a complete loss and we figured our in-

struments were damaged beyond use.

"Upon return of the shipment we found that although some of the containers were crushed, the liners had prevented even the slightest damage to the sounders. Electronic tests showed each instrument in perfect operating condition."

Your product can have the same protection that saved these fragile instruments. Write your nearest Gair Container plant to find out how.

YOU'RE LIVING NEXT DOOR TO THE EXPERT

GAIR CONTAINER PLANTS: Atlanta, Ga. • Cambridge, Mass. • Cleveland, Ohio • Holyoke, Mass. • Jackson, Miss. • Los Angeles, Cal. • Martinsville, Va. • New Orleans, La. • No. Tonawanda, N. Y. • Philadelphia, Pa. • Plymouth, Mich. • Portland, Conn. • Richmond, Va. • Syracuse, N. Y. • Teterboro, N. J.



GAIR

SHIPPING CONTAINERS • FOLDING CARTONS

PAPERBOARD • KRAFT BAGS AND WRAPPINGS

ROBERT GAIR COMPANY, INC. • 155 EAST 44TH STREET • NEW YORK 17, N.Y.

SC.5.10

For More Information Circle No. 176 on Inquiry Card—Page 17
36

For More Information Circle No. 177 on Inquiry Card—Page 17→
PURCHASING

Nothing finer!

A statement from
a conservative organization:

*"Our records show that when a manufacturer once
discovers the uniform quality of Roebling flat spring
steel, he becomes a steady Roebling customer."*

You, too, *pay* for the best spring steel...make sure
you *get* it. Specify Roebling. John A. Roebling's Sons
Corporation, Trenton 2, N. J.



ROEBLING 

Subsidiary of The Colorado Fuel and Iron Corporation



S.S. United States... most modern,
fastest liner afloat.

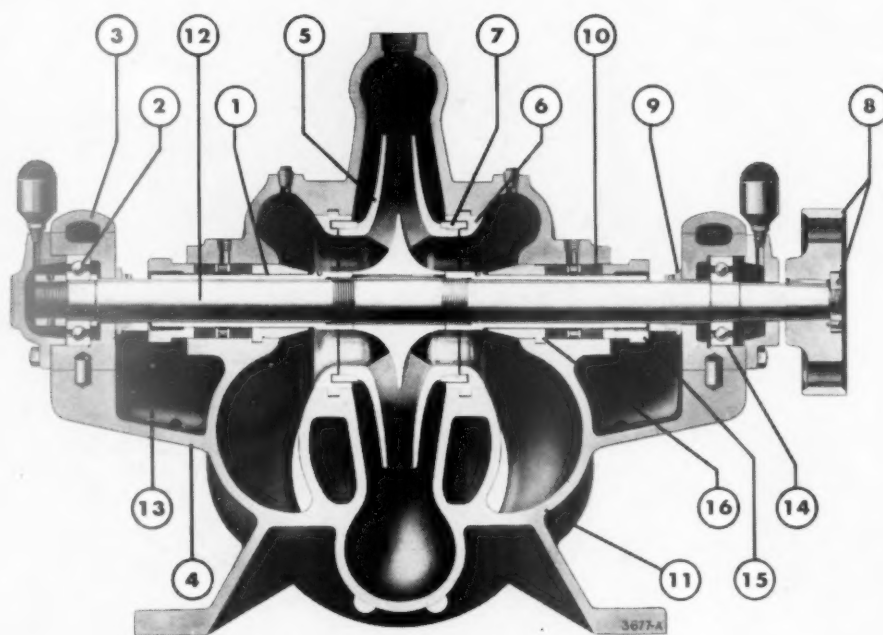
ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. & 5 PITTSBURGH ST. • CHICAGO,
5525 W. ROOSEVELT RD. • CINCINNATI, 3253 FREDONIA AVE. • CLEVELAND, 13225
LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER
BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. •
NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1920 E. 2ND ST. • PHILADELPHIA, 230
VINE ST. • ROCHESTER, 1 FLINT ST. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900
1ST AVE. S. • ST. LOUIS, 3001 DELMAR BLVD • TULSA, 321 N. CHEYENNE ST. •
EXPORT SALES OFFICE, 19 RECTOR ST., NEW YORK

DE LAVAL

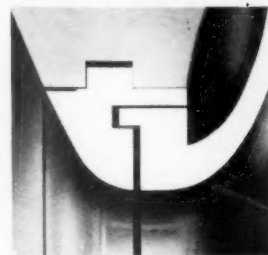
SINGLE STAGE

CENTRIFUGAL PUMPS

for dependable industrial service



Labyrinth wearing rings minimize leakage...maintain high efficiencies



Labyrinth rings used in these De Laval pumps retard flow of water through labyrinth passage.



Flat rings showing relatively unimpeded flow of water.

- ① **Shaft Sleeves** are screwed on, to abut the impeller and make a water-tight joint. Sleeve expands freely and independently of shaft when temperatures change. There is no tendency to buckle.
- ② **Thrust Bearing** locates rotor axially.
- ③ **Bearing Caps** easily removable for maintenance.
- ④ **Bearing Brackets** scraped to lining bars for perfect alignment.
- ⑤ **Impeller** hydraulically balanced, finished on all surfaces.

- ⑥ **Labyrinth Wearing Rings** held accurately in machined grooves in both case and cover.
- ⑦ **Impeller Wearing Rings** threaded on impeller, opposite to rotation.
- ⑧ **Flexible Coupling** ground on all exposed surfaces and statically balanced, complete coupling supplied, pump half mounted on taper so that it can be easily removed. Check nut locks coupling on taper.
- ⑨ **Deflector** keeps water out of bearing.

- ⑩ **Stuffing Boxes** extra deep; lantern rings for water sealing.
- ⑪ **Pump Case** horizontally split; machined to limit gages.
- ⑫ **Steel Shaft** ground to limit gages.
- ⑬ **Drip Boxes** large; provided with drain openings.
- ⑭ **Radial Bearing** free to move axially, thus avoiding temperature strains.
- ⑮ **Glands** split horizontally.
- ⑯ **Protecting Bushings** renewable.

You can count on the performance of the De Laval Single Stage Centrifugal Pumps because they are precision-made to high manufacturing standards and incorporate the many quality design features shown in the cross-section.

They operate at high or low speeds, at high or low heads...with maximum efficiency.

For example, De Laval G, I and K Single Stage Double Suction Pumps have a capacity range of 175 gpm to 6,000 gpm, and heads to 300 feet. They are available in sizes ranging from 4" suction and 3" discharge to 14" suction and 12" discharge. Write for Bulletin 1002.

DeLaval also furnishes larger centrifugals for capacities up to 70,000 gpm.



DE LAVAL Centrifugal Pumps

DE LAVAL STEAM TURBINE COMPANY

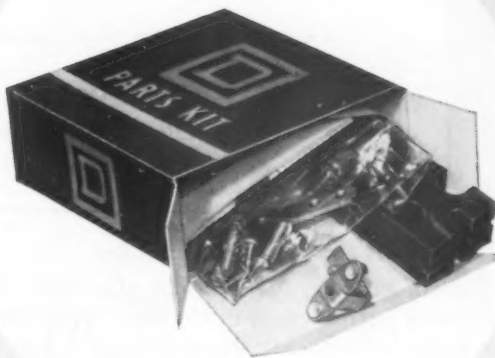
807 Nottingham Way, Trenton 2, New Jersey

Here's Why We Specify **SQUARE D Starters** on the Machinery We Buy



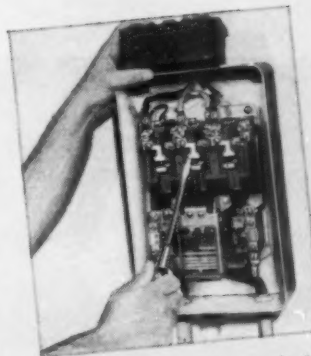
PERFORMANCE, EASY INSPECTION AND MAINTENANCE

Sure, we like Square D performance because it keeps our "down time" at a minimum. BUT—everybody knows that even the best starter needs periodic inspection and preventive maintenance. We like the way Square D makes it easy to handle those routine jobs.



OFF-THE-SHELF PARTS KITS

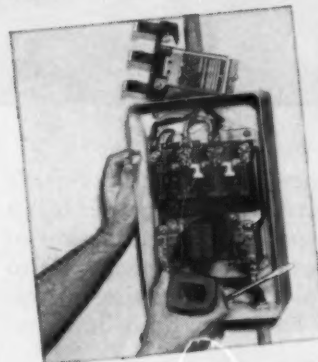
They make normal maintenance and modifications easier than ever. Packaged parts include interlocks, contacts, coils, overload relays, pushbuttons and selector switches. They're easy to buy, easy to identify, and faster to install.



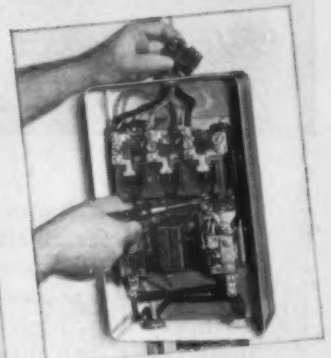
1 Loosen two screws and the arc chamber cover comes off. Every contact surface can be inspected at a glance.



2 Remove four screws and entire movable assembly can be lifted off. Disconnect two wires and slip off magnet coil.

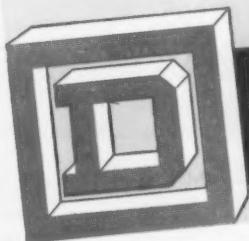


3 Contacts are attached with separate screws—they can be removed and replaced without disturbing any wiring. A screwdriver is the only tool needed.



4 Sizes 0 through 4 starters have these separate mounting electrical interlocks for easier installation. Contact block is attached from front of panel with two screws.

ASK YOUR ELECTRICAL DISTRIBUTOR FOR SQUARE D PRODUCTS



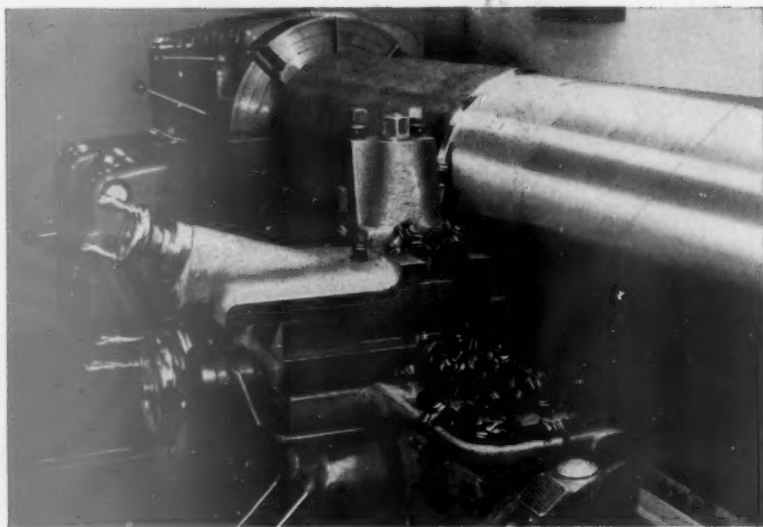
SQUARE D COMPANY

NEW...ALL NEW!



FIRTHITE TXH

A heavy-duty, general purpose premium Carbide at no premium price



OUTSTANDING FEATURES OF TXH

- Higher hardness to strength ratio.
- Improved impact resistance.
- Wider range of applications.
- Cooler operating temperatures.
- Higher edge strength.
- Greater resistance to abrasion.

TXH is new, brand new, not just another grade designation for an altered existing grade. It is a completely new concept . . . a combination of materials and processes designed specifically to do heavy duty, high production cutting operations better than they have ever been done before. It does.

During development in Firth Sterling laboratories, FIRTHITE TXH *out-performed* and *out-*

lasted all other premium grades of carbide. After thorough introduction in the field, performance has exceeded laboratory predictions in case after case.

Here is a premium quality carbide developed for an age of automation which, at no extra cost, out-performs and outlasts all others.

Available from stock now in all standard tips and tools. Try it *now* and *prove it yourself!*

FOR ENGINEERING SERVICE CALL YOUR NEAREST FIRTH STERLING REPRESENTATIVE

Firth Sterling

—INC—

GENERAL OFFICES: 3113 FORBES ST., PITTSBURGH 30, PA.

MILLS: McKEESPORT, TRAFFORD, DETROIT, HOUSTON

OFFICES AND WAREHOUSES*: BIRMINGHAM CHICAGO* CLEVELAND DAYTON DETROIT* HARTFORD* HOUSTON LOS ANGELES* NEW YORK PHILADELPHIA PITTSBURGH WASHINGTON WESTFIELD, N.J.

CALL YOUR FIRTH STERLING DISTRICT OFFICE OR DISTRIBUTOR. ASK MR. TOOLEY.

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R-314

PRODUCTS OF FIRTH STERLING METALLURGY

High Speed Steels

Tool & Die Steels

Stainless Specialties

High Temperature Alloys

Sintered Tungsten Carbides

Firth Heavy Metal

Chromium Carbides

High Temperature Cermets



Zirconium

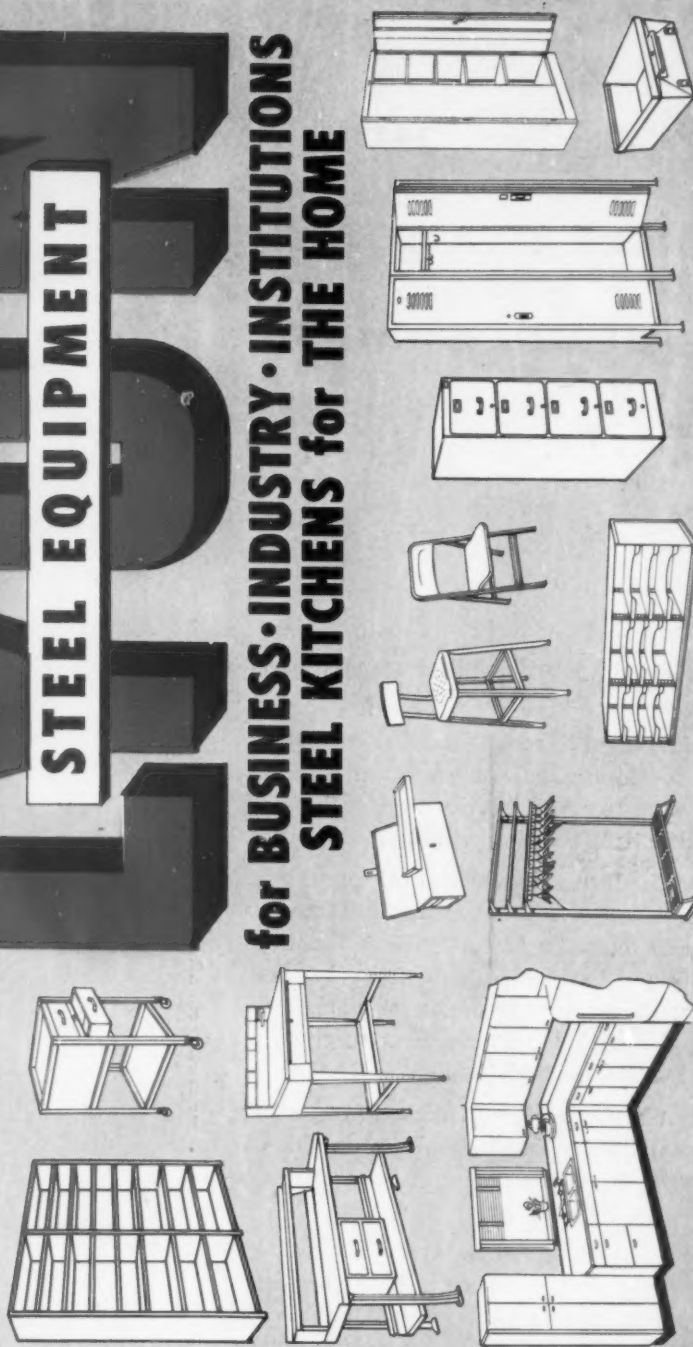
Ask

YOUR LYON

Dealer for

STEEL EQUIPMENT

**for BUSINESS • INDUSTRY • INSTITUTIONS
STEEL KITCHENS for THE HOME**



A PARTIAL LIST OF LYON STANDARD PRODUCTS

- Shelving
- Lockers
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- Bin Units
- Kitchen Cabinets
- Cabinet Benches
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- Drawing Tables
- Tool Toters
- Bar Racks
- Tool Boxes
- Parts Cases
- Chests and Safes
- Display Equipment
- Toolroom Equipment
- Wood Working Benches
- Flat Drawer Files
- Revolving Bins
- Filling Cabinets
- Hanging Cabinets
- Folding Chairs
- Coat Racks
- Bench Benches
- Bench Drawers
- Hopper Bins
- Service Carts
- Sorting Files
- Drawer Units
- Shop Desks
- Tool Stands
- Shop Boxes
- Shop Trays

**LYON METAL
PRODUCTS, INC.**

**General Offices: 133 Monroe Ave., Aurora, Ill.
Factories in Aurora, Ill. and York, Pa.
Dealers and Branches In All Principal Cities**

HOW A NATIONAL-STANDARD WIRE DEVELOPMENT

*keeps her hair prettier
all day long*

Millions of pounds of steel are used each year to make bobby pins.

And it's a tricky steel to make, as we learned while developing it . . . tricky, that is, if our customers were to avoid fabricating troubles and hold manufacturing costs to a minimum.

We had to produce a special kind of round wire that could be flattened without cracking. It had to have an extremely uniform finish to facilitate coloring and to permit high speed processing without frequent costly adjustments of machinery.

It had to be suitable for tempering to give the right springiness and tension.

Not only did our engineers succeed in meeting all of these challenges, but they also were able to save our customers money on manufacturing, packaging and handling.

We solve problems like these every day for our customers and give them better, more complete service than they get elsewhere. That's why National-Standard is industry's foremost supplier of special wire, wire cloth and strip steel.

May we serve you, too?



For More Information Circle No. 181 on Inquiry Card—Page 17

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NATIONAL-STANDARD COMPANY • NILES, MICHIGAN
Tire Wire, Stainless, Fabricated Braids and Tape

ATHENIA STEEL DIVISION • CLIFTON, N. J.
Flat, High Carbon, Cold Rolled Spring Steel

REYNOLDS WIRE DIVISION • DIXON, ILLINOIS
Industrial Wire Cloth

WAGNER LITHO MACHINERY DIVISION • JERSEY CITY, N. J.
Special Machinery for Metal Decorating

WORCESTER WIRE WORKS DIVISION • WORCESTER, MASS.
Round and Shaped Steel Wire, Small Sizes

For More Information Circle No. 182 on Inquiry Card—Page 17→

PURCHASING

STRUCTURALLY DIFFERENT...

FOR EXTRA STRENGTH

EXTRA SAFETY



IT'S THE

new
SIMEX®
RED WHEEL

SIMONDS
ABRASIVE CO.

For rough, tough production grinding—welds, removing flash and bead; cleaning up rough ragged surfaces and edges. This new lightweight rigid type reinforced resinoid bonded abrasive wheel can give you sensational savings. Use Simex on portable disc type and right angle type portable grinders. Depressed center or raised hub shape; 7" and 9" diameter x 3/16" and 1/4" thickness.

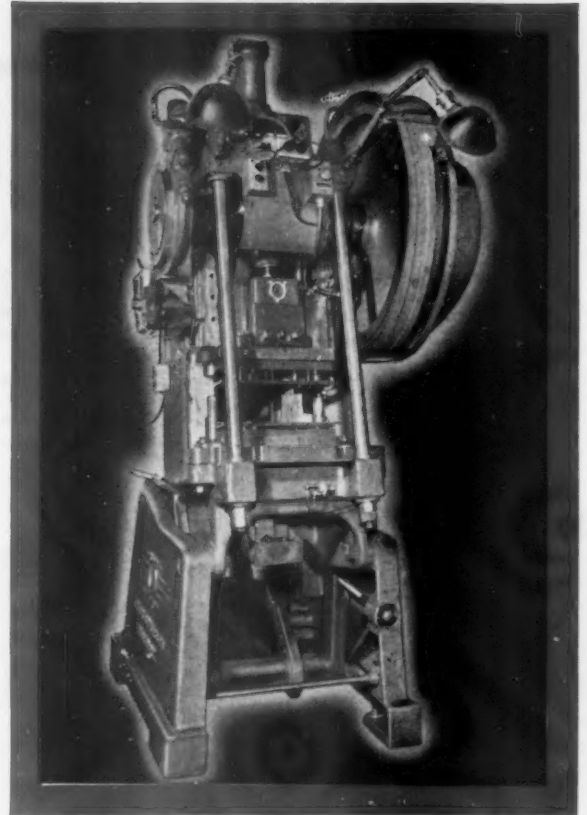
**SEND FOR BULLETIN ESA-244
AND LEARN HOW MUCH BETTER
SIMEX IS FOR YOUR JOB**

Extra Savings
FROM YOUR
SIMONDS DISTRIBUTOR'S
STOCK • SERVICE • KNOW-HOW

SIMONDS ABRASIVE COMPANY • PHILADELPHIA 37, PA.

Branch Warehouses: Boston, Detroit, Chicago, Portland, San Francisco. Distributors in Principal Cities
Division of Simonds Saw and Steel Co., Fitchburg, Mass.

WHAT R-B PUNCHES SAVE...



What does this press cost you per hour?

If you use shoulder or set-screw type punches, you have excessive press down-time when replacing worn or broken punches.

But, with R-B interchangeable and standardized punches and die buttons you get quick insertion and removal in the press. The R-B ball lock features, that assure positive radial alignment and vertical locking without further keying, permit greater press utilization.

Use R-B Engineering Service for Your Tough Piercing Problems.

RICHARD BROTHERS PUNCH DIVISION ALLIED PRODUCTS CORPORATION

DEPT. 72 — 12603 BURT RD. — DETROIT 23, MICH.

Please send me additional information.

NAME _____ TITLE _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____



Also Produced in

OTHER ALLIED PLANTS

SPECIAL COLD FORGED PARTS

STANDARD CAP SCREWS

PRECISION GROUND PARTS

SHEET METAL DIES

MADE OF FERROUS ALLOYS,

ZINC ALLOYS OR PLASTICS

3 Easy Steps make FLOOR MAINTENANCE Savings!

SEND FOR FREE HELP TODAY!

A Hillyard PLAN WILL SAVE LABOR COST

Yes you can have the finest treatment and maintenance program that's in use today in thousands of America's buildings—yet enjoy savings that will amaze you. Three simple steps can bring you this economy.



1 BUY QUALITY MATERIALS. Don't let cheap materials fool you. Remember 95c out of every dollar spent for floor maintenance goes for labor. It's not the original cost that counts. Hillyard products are made to last longer—actually save up to 50% in labor costs.

2 USE PROPER TOOLS. Maintenance tools that are worn, or unsuited to the purpose will increase unnecessary labor, using even the best materials. Hillyard equipment that is "right" for each specialized maintenance operation can simplify methods—save hours in daily treatment.

3 TRAINING IS NECESSARY. The Hillyard Maintainer works with your maintenance staff to explain proper application, necessary daily operations and adequate re-treating schedules. You get additional savings in material and labor with a trained staff using a Hillyard Treatment program.



FREE SURVEY OF YOUR FLOORS

Find out today how Hillyard recommendations, made by a trained floor expert, can benefit you.

No charge or obligation for the "Maintainers" survey. He is "On Your Staff, not your payroll".



ST. JOSEPH, MO. PASSAIC, N. J. SAN JOSE, CALIF. Branches in Principal Cities

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This 18" O.D. x 3.90" wall, 18" radius chrome moly WeldELL is in power plant service carrying steam at 2000 psi and 1050F.

18 x 3.90 TAYLOR FORGE WELDELL WF22-65K4

TAYLOR



Welding nozzles



T.E.M.A. flanges and channels



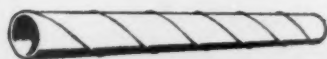
Multiple outlet headers



Production forgings



Venturi reducers




Spiral weld pipe



Large diameter electric weld pipe



Welding necks



Traditionally Dependable

FORGE

Welding Fittings and Forged Flanges

Engineered for accuracy . . . forged for greatest strength and longest life . . . backed by the know-how that has come with 55 years of experience in the forming of metal products by hammering, rolling, extruding, drawing, pressing, welding—in fact, by every known basic metal working process.

That's why . . . by any standard of comparison . . . by any method of value analysis . . . you can't buy better products than those of TAYLOR FORGE.

For EVERYTHING in Welding Fittings and Forged Flanges . . . every type, size, thickness, pressure rating, material . . . turn to TAYLOR FORGE.

Taylor Forge & Pipe Works

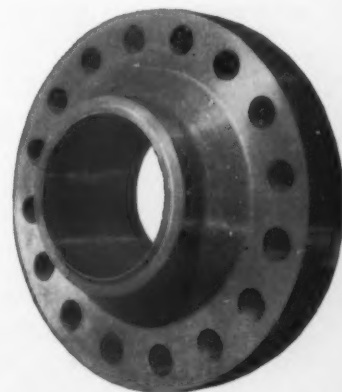
General Offices and Works: P. O. Box 485, Chicago 90, Illinois

Plants at: Carnegie, Pa.; Gary, Ind.; Houston, Texas; Fontana, Calif.;
Hamilton, Ont., Canada.

District Sales Offices: New York, Philadelphia, Pittsburgh, Atlanta, Chicago, Houston,
Tulsa, Los Angeles, San Francisco, Toronto, Calgary.

There's a Taylor Forge Distributor near you

He carries a full stock of Taylor Forge Welding Fittings and Forged Steel Flanges and can supply your needs promptly. He's a good man to know for he's exceptionally well informed on the subject of piping and through him you have available the services of Taylor Forge engineers for help and advice on any piping problems.



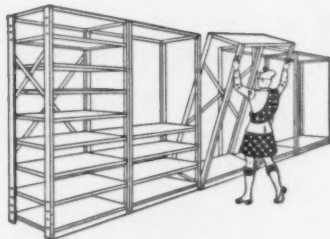
LASTING QUALITY ECONOMY

BORROUGHS *UNITIZED *flexi* STEEL SHELVING

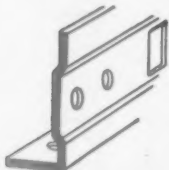
Again we repeat what American industry is fast discovering about Borroughs Unitized flexi Steel Shelving... "No steel shelving is easier or quicker to assemble. It's the most practical, most flexible, most economical shelving on the market. Saves time—saves money—from the first day of its installation." You owe it to yourself and your company to investigate all the outstanding advantages of Borroughs Unitized flexi Steel Shelving.

Each individual unit is complete in itself

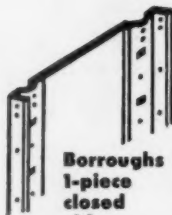
..no part depends on unit next to it..any unit or shelf can be moved independently.



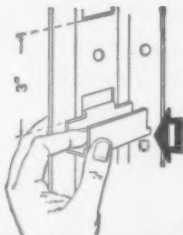
send for new 32-page catalog



Borroughs heavy gauge rolled shaped-post for open shelving gives extra strength.



Borroughs 1-piece closed sides for closed shelving.. saves erection time.



Insert shelf support bracket ..no fumbling with studs, bolts, nuts or lock washers.



Tilt shelf into support bracket ..and shelf is ready for loading.



Flexibility is demonstrated in this partial view of the large Borroughs shelving installation at the Ford Motor Co., Assembly Plant No. 2, Louisville, Kentucky.



A portion of the Borroughs shelving installation at the warehouse-carpet section of the J. L. Hudson Co. department store, Detroit, Michigan. Open end assembly permits easy storage of rolled stock.



Borroughs double faced open shelving installation at Charles Scribner's Sons, Publishers, New York City. Note compact shelving arrangement—open face unit at ends requires minimum floor space.

BORROUGHS MANUFACTURING COMPANY

A SUBSIDIARY OF THE AMERICAN METAL PRODUCTS COMPANY OF DETROIT

3014 NORTH BURDICK **amp** KALAMAZOO, MICHIGAN

amp Plants and other Subsidiaries: (American Metal Products Co.—Detroit, Michigan—Union City, Tennessee) (AllianceWare, Inc.—Alliance, Ohio—Kilgore, Texas—Colton, California) (General Spring Products, Ltd.—Kitchener, Ontario, Canada) (Tube Reducing Corp.—Wallington, New Jersey)

Manufacturers of quality products for automobiles, trucks, aircraft, offices, factories, warehouses, and homes:

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For More Information Circle No. 186 on Inquiry Card—Page 17

They're as strong

as they look

When you use headed-and-threaded items made by Bethlehem, you can be sure they'll be plenty strong for the job. Bethlehem fasteners have great strength, and are top quality all the way, for they are made from sound steel by men who are specialists in fastener-manufacture. What's more, Bethlehem fasteners come in hundreds of individual types and sizes, making it easy for your jobber to meet your requirements. Give him a call today!



Bethlehem Bolts Are Good Bolts



STANOIL Industrial Oil delivers on tough assignment at Indianapolis Screw Products Corp.



Mr. R. W. Williams, Plant Superintendent checks pitch diameter of thread with Glenn Riggs, Standard lubrication specialist. Glenn Riggs is an old hand at helping industrial firms work out lubrication problems. Glenn has been doing this sort of thing for 28 of the 30 years he's been with Standard. This background and experience, customers have found, pay off for them.



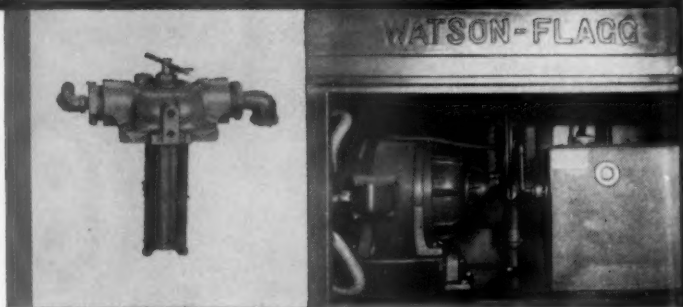
STANDARD OIL COMPANY

(Indiana)

Rolling threads on aluminum bronze with pitch diameter tolerances as close as .0014" is a tough job but Indianapolis Screw Products Corporation is used to taking on such jobs and delivering. They give tough jobs to the hydraulic oil they use, too, and they expect it to deliver. They've given such a job to STANOIL and they're getting the results they expect—and more.

STANOIL Industrial Oil is used in the hydraulic system of a Watson-Flagg precision thread roller in the Indianapolis Screw Products Corporation plant. The system uses a Vickers pump and Cuno filter. The filter has not been cleaned in over a year *because it hasn't needed cleaning*. Here, as in other applications, STANOIL delivers top performance with minimum maintenance and maximum system cleanliness of the hydraulic system.

STANOIL likes tough assignments like this one; likes them because it can deliver with plenty to spare. Perhaps you would like to know about the use of STANOIL in a hydraulic application in your plant. In the Midwest and Rocky Mountain states, a lubrication specialist at your nearby Standard Oil office will be happy to discuss it with you. Call him. Or contact Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.



Cuno filter (left) remains clean after more than year filtering STANOIL. Vickers pump on Watson-Flagg Thread Roll machine (right). Good housekeeping and STANOIL team to give top performance in this hydraulic system.

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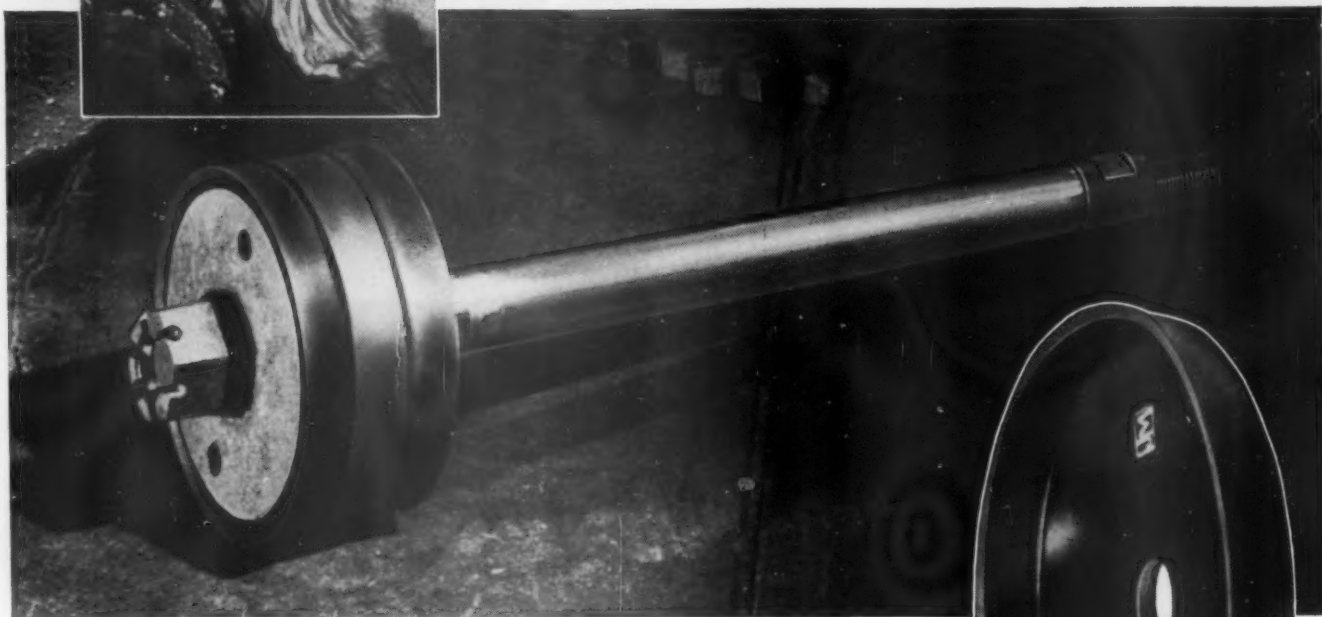
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*Trying to reduce
piston packing maintenance?*



J-M Pump Cups after removal from feed water pumps at Morgan Laundry. Set above consists of 2 J-M "A" Cups with spacer and 2 followers, mounted on pump rod

At the Morgan Laundry, J-M Moulded Packings provide

**"8 times longer life-
replacement in 1/6 the time"**

THE MORGAN LAUNDRY, large supplier to hotels and institutions, requires dependable, trouble-free service from boiler room equipment. In their New York City plant, the Engineering Department found that conventional piston packings for boiler water feed pumps lasted only a relatively short time. Many hours of down time were required to replace packings. Liner wear became progressively worse.

When the Engineering Department changed from the conventional material to J-M Moulded Packing Cups, service life of the packing was increased more than 8 times. Liner wear was greatly reduced. Replacement with the new packings was made in 1/6 the time. Packings could be easily installed for proper service, without special skill or experience. Satisfaction with this application has led to the use of J-M

Moulded Packing Cups on other boiler room equipment and on presses in the Morgan Laundry plant.

These precision moulded packings offer definite advantages over conventional types. Because they form a highly efficient seal, they contribute to improved performance, lower operating and maintenance costs. For steam pump pistons, they are available in sets consisting of two cups and two followers, with a spacer. This pump cup set, J-M Style 80, is similar to that shown in the illustration above.

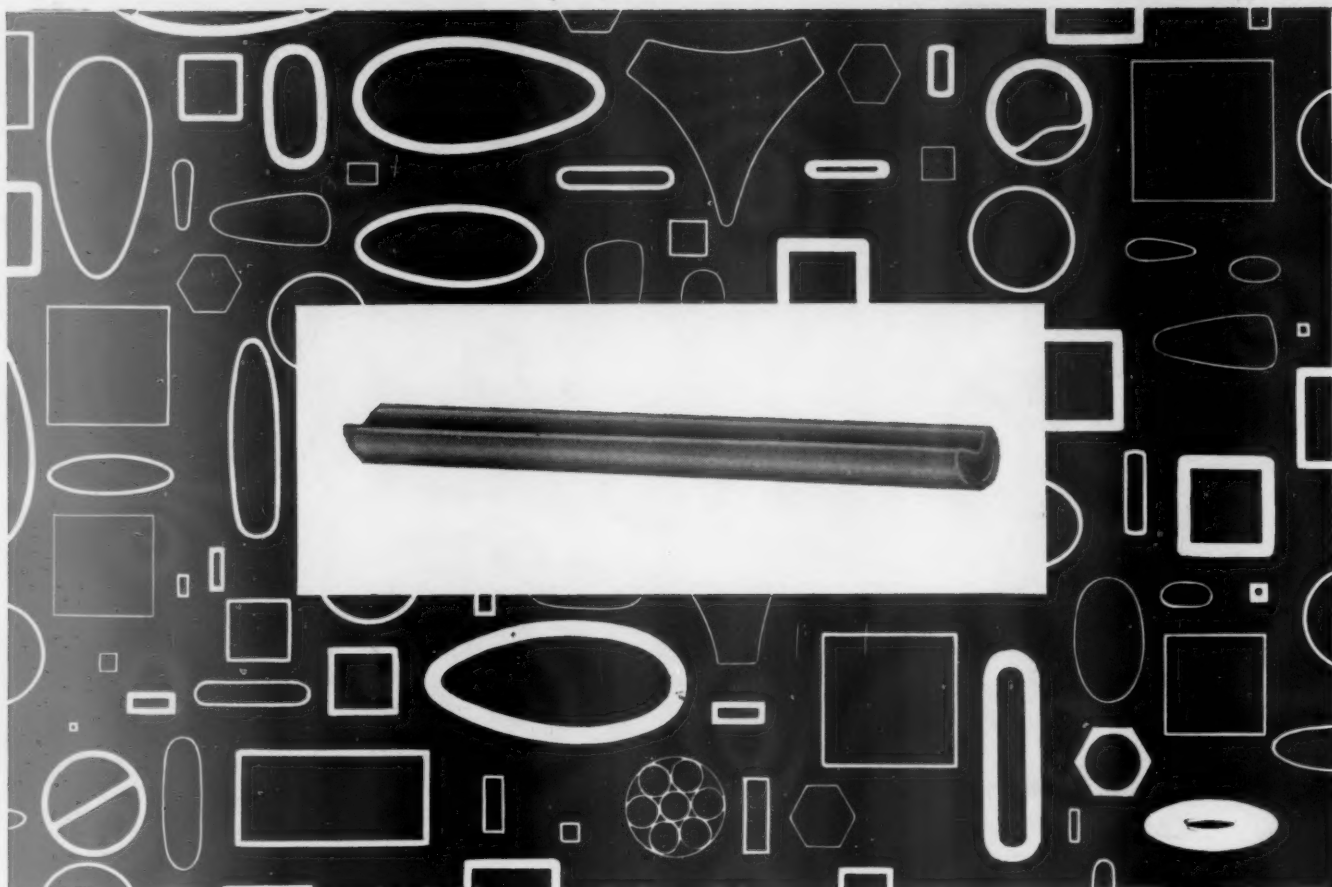
Your Johns-Manville Packings Distributor can help you make the right selection for your application, from Johns-Manville's line of custom-made Piston Packing Cups. For complete details write him or Johns-Manville, Box 60, New York City 16. In Canada, 199 Bay Street, Toronto 1, Ontario.



Johns-Manville PACKINGS & GASKETS

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JANUARY, 1956

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A few of the shapes available from SUPERIOR in standard specifications and tolerances or to your own design. The tube in the foreground is a gun drill shank made from 4130 alloy steel.

Save time and money on special shaped tubing

"SUPERIOR" TUBING IS IMMEDIATELY AVAILABLE
IN A WIDE RANGE OF SHAPES, FORMS, ALLOYS

Many manufacturers have discovered that SUPERIOR's ability to supply as standard what many firms consider specialty tubing saves them trouble, time and money. SUPERIOR makes round, square, oval, rectangular, elliptical and flat oval tubing, for instance. It makes capillary tubing, pointer tubing, electronic tubing, telescopic sizes, large OD-light wall tubing. Over 55 analyses are available in carbon, alloy and stainless steels; in nickel and nickel alloys; in beryllium copper, titanium, zirconium.

The gun drill shank shown above and on the right is a good example of SUPERIOR's ability to supply unusual

shapes. This newly rediscovered method of producing close-tolerance high-finish holes demands straight, rigid, accurate shanks with a 110° V-groove. SUPERIOR can produce such a shape—and others—in a fraction of the time and cost it would take a customer to form his own.

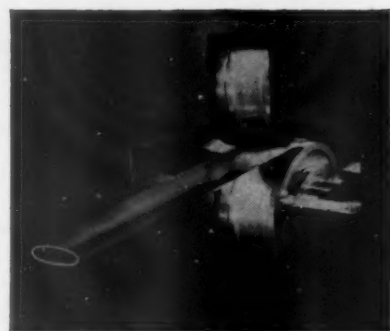
If you're having difficulty getting the kind of tubing you want, SUPERIOR can undoubtedly help you. Write for your free copy of Bulletin 40—*A Guide to the Selection and Application of Superior Tubing*. SUPERIOR TUBE COMPANY, 2034 Germantown Ave., Norristown, Pa. *On the West Coast:* Pacific Tube Company, 5710 Smithway St., Los Angeles 22, Calif.

All analyses available in .010" to ½" OD; certain analyses in light walls up to 2½" OD

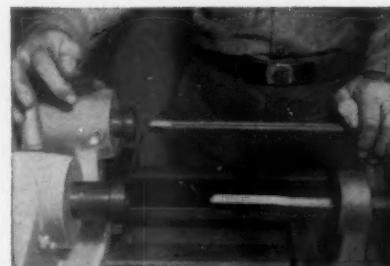
Superior Tube

The big name in small tubing

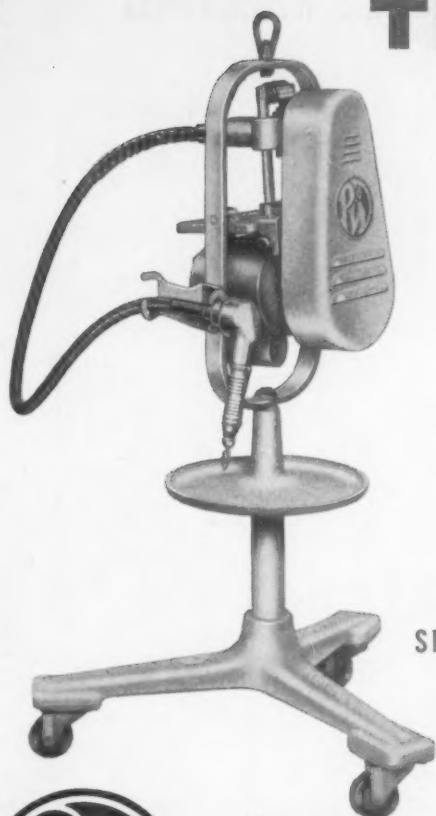
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Turks-head rollers converting a round section of SUPERIOR tubing into the typical elliptical shape for a Bourdon gage tube.



Gun drills can produce holes from 4 to 230 diameters or more in 4 times the speed of conventional drilling methods or better. Holes so produced are straight and round to tolerances of 0.0002" or less and wall finishes are 7 mu-in or better.



THE BEST TEAM for Finer, Faster HAND FINISHING

VERSATILE • DEPENDABLE • POWERFUL

Burring, filing, sanding, grinding, polishing, wire brushing . . . no other machines do so many jobs so well. Here is a real investment in versatile, dependable metal finishing. Smooth, easy operation pleases the man in the shop . . . finer, faster production at lower cost appeals to management. Rugged construction assures full dependability; Kellerflex Machines take severe punishment . . . stand up to heavy duty, high speed operation year-in-year-out. Kellerflex makes craftsmen!

SERIES "M" . . . $\frac{1}{4}$ to 1 hp. Low speed machine 1000 to 6000 rpm, high speed machine 2000 to 12,000 rpm; both have 16 speed changes. Universal mount for bench, suspension or floor stand use.



FLEXIBLE SHAFT MACHINES KELLERFLEX AND BURS

CUT FASTER, SMOOTHER, LONGER

BECAUSE THEY ARE MASTER MACHINE GROUND . . . and correct in every respect. Flute spacing, depth, helix angle and rake angle are correctly designed and accurately ground. The result is a superb bur . . . faster, smoother cutting without chatter or bounce . . . and an overall efficiency far above that of any burs now available. For complete information, write for P&W Circular No. 562.

CHOOSE THE RIGHT P&W BUR FOR YOUR NEEDS from...

- THREE BASIC CUTS . . . fine, medium or coarse
- 4 SHANK SIZES . . . $\frac{1}{8}$ ", $\frac{3}{16}$ ", $\frac{1}{4}$ " and $\frac{3}{8}$ "
- 18 STANDARD SHAPES . . . plus dozens of specials to order
- HIGH SPEED STEEL or CARBIDE • 6 TYPES of MASTER GROUND FLUTING
- and P&W HOLE FINISHING BURS . . . low-cost, high-precision finishing of small holes down to .032" diameter.



SEND NOW FOR COMPLETE INFORMATION

Write on your Company letterhead for Circular No. 580 fully describing all of the P&W Kellerflex Machines

PRATT & WHITNEY COMPANY

INCORPORATED

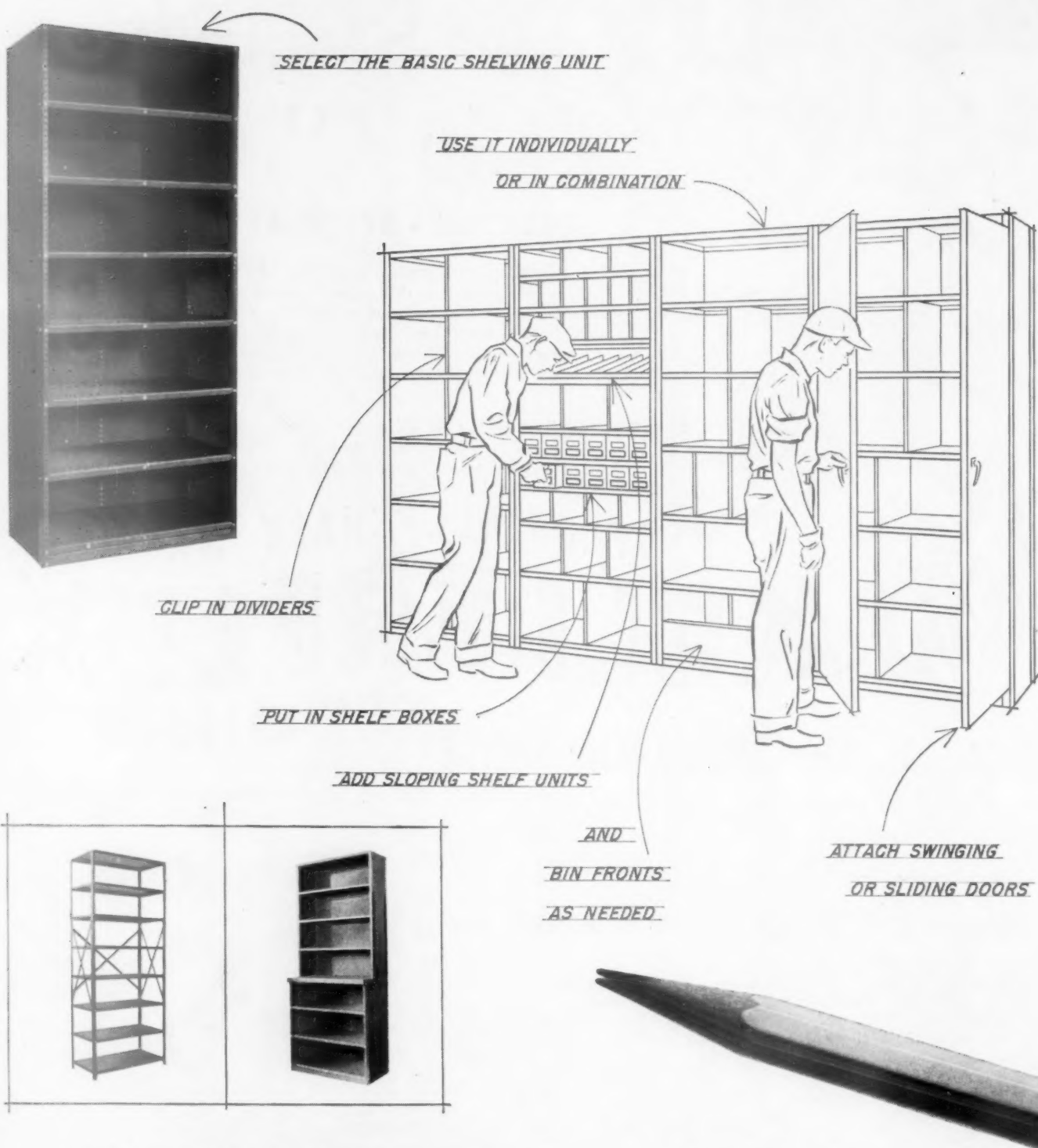
19 Charter Oak Boulevard, West Hartford, Connecticut

BRANCH OFFICES . . . BIRMINGHAM • BOSTON • CHICAGO • CINCINNATI
CLEVELAND • DETROIT • LOS ANGELES • NEW YORK • PHILADELPHIA • PITTSBURGH
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MACHINE TOOLS • GAGES • CUTTING TOOLS

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HOW TO USE HALLOWELL ADJUSTABLE SHELVING



Baked-on Enamel Finish • Sturdy Steel Construction •
Interchangeable Parts Easy to Assemble • Stocked by
Leading Shop Equipment Dealers • Send for Bulletin
2057 • Hollowell Shop Equipment Division • Standard
Pressed Steel Co., Jenkintown 31, Pa.

HALLOWELL SHOP EQUIPMENT DIVISION

STANDARD PRESSED STEEL CO.



JENKINTOWN PENNSYLVANIA

BENCHES (CABINET, WORK, UNIT) • STOOLS AND CHAIRS • SHOP DESKS • TOOL
 STANDS AND CABINETS • DRAWERS, DRAWER TIERS • STEEL CARTS • SHELVING

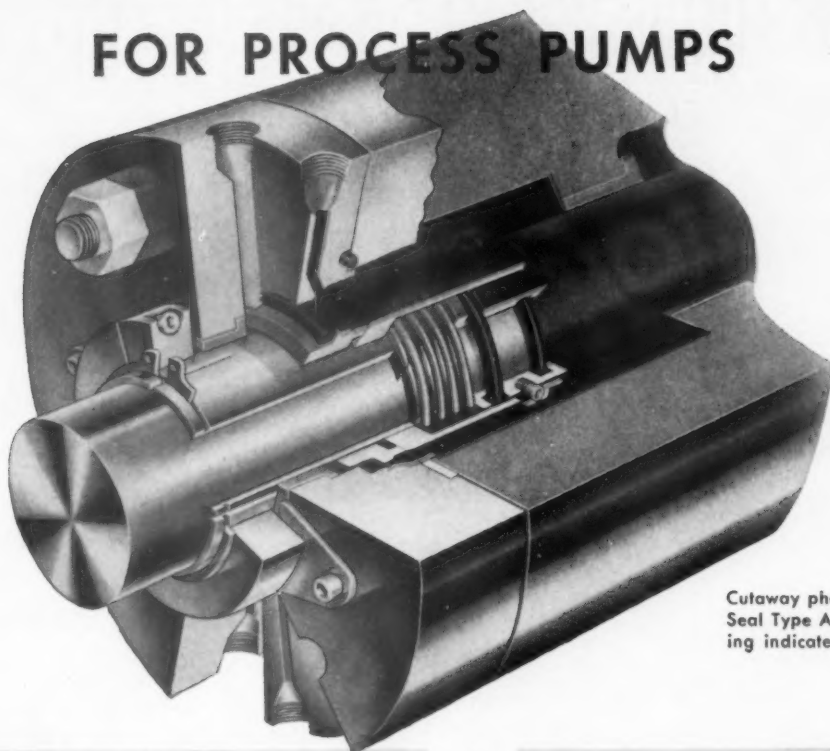
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NEW

from GARLOCK...

MECHANIPAK* SEALS

FOR PROCESS PUMPS



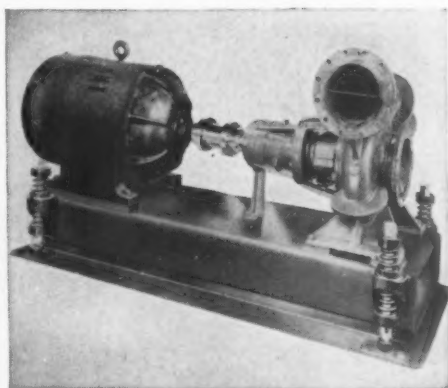
Cutaway photo of Garlock Unitary Seal Type AA51B-23. Yellow shading indicates liquid being sealed.

► **One Piece Assembly**

► **Quick, easy installation**

► **Pre-set at factory**

► **Maintenance-free life**



Typical digester circulating pump for which Garlock Unitary Seals are designed.

SAVE installation time, eliminate maintenance costs with Garlock's new Unitary Mechanipak Seals for process pumps!

The entire unit, including sleeve and gland, is furnished completely assembled. The seal is pre-set at the factory—no on-the-job adjustments are needed. The *external* lock and drive is readily accessible—eliminates set-screw drive.

Get all the facts today! Phone your Garlock representative or write for new Folder AD-151.

The Garlock Packing Company, Palmyra, New York

Sales Offices and Warehouses: Baltimore, Birmingham, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Denver, Detroit, Houston, Los Angeles, New Orleans, New York City, Palmyra (N.Y.), Philadelphia, Pittsburgh, Portland (Oregon), Salt Lake City, San Francisco, St. Louis, Seattle, Spokane, Tulsa.

In Canada: The Garlock Packing Company of Canada Ltd., Toronto, Ont.



GARLOCK

*Registered Trademark

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Tuffy SLING NEWS

Vol. 1

Published Monthly in Leading American Trade Magazines by Union Wire Rope Corp.

No. 3

NEW FERRULE EYE SPLICE FEATURED In Big, New Tuffy Sling Handbook Just Off Press-FREE



First editions of this handbook were so popular that 85,000 copies circulated to sling users. If you use or buy slings—if you're a plant engineer, safety engineer or purchasing agent—you'll find this new, enlarged edition of the Tuffy Sling Handbook the most comprehensive ever published.

It tells you all about the new factory-fitted slings added to the Tuffy line. It shows why the new Tuffy pressed-on ferrule makes Tuffy slings faster, safer, and easier to load and unload than ever before. Many of the fittings—clamps, hooks, bridles, thimbles, saddles—are new, too. And this latest edition of the Tuffy Sling Handbook contains a host of other useful information: a complete rigger's manual, proof tested ratings and specifications for all Tuffy Slings; a new engineer's notebook; data tables on a full line of versatile, easy-to-apply sling fittings.

But don't delay to order your **FREE** copy. Mail the coupon to us now. We'll send it to you by return mail with Tuffy's compliments—nothing to buy, no obligation. Hurry. The supply is limited!

New Tuffy Ferrule Makes Sling History

It's on all Tuffy Slings, but it doesn't cost you a penny extra. There's no sling ferrule like it anywhere. Tuffy's streamlined metal ferrule is set on the eye splice under pressure so great that the inner metal virtually flows into the voids between the wire fabric. A force of friction is created so great that the eye splice has strength equal to that of the famous machine braided Tuffy wire fabric. It makes Tuffy Slings stronger. It makes them safer: The ends of the tapered ferrule are swaged tightly to the fabric leaving no edges to hang up on loads or to injure workers' hands in hitching to and unhitching from sling loads. There's still another advantage—because Tuffy Slings are easier and safer to load, they're also faster to load. Your men can do more work when they're working with Tuffy Slings.

New Tuffy Ferrule

has no sharp edges to injure hands or catch on loads. The tapered and rounded ends are swaged tight to the sling fabric. The tremendous pressure at which the ferrule is pressed around the machine braided wire fabric flows the metal into the voids of the eye splice and gives the eye splice 100 per cent of the strength of the fabric.



YOU CAN'T HURT A TUFFY SLING

Loop it, pull the loop taut. Tuffy's 9-part machine braided wire fabric construction resists kinking. But if you are able to kink it, you can straighten it out quickly and without materially damaging the fabric.



CONSULT YOUR DISTRIBUTOR

when you want to buy Tuffy Slings or Tuffy Hoist Lines. Give him your requirements. He'll stock an inventory for you to draw against. It saves you time and money.

Clip Coupon and
Mail for New **FREE**
Tuffy Sling
HANDBOOK



union Wire Rope corporation

Specialists in high carbon wire, wire rope, braided wire fabric, stress relieved wire and strand.

2282 Manchester Avenue, Kansas City 26, Missouri

MY NAME _____ TITLE _____

COMPANY NAME _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

14

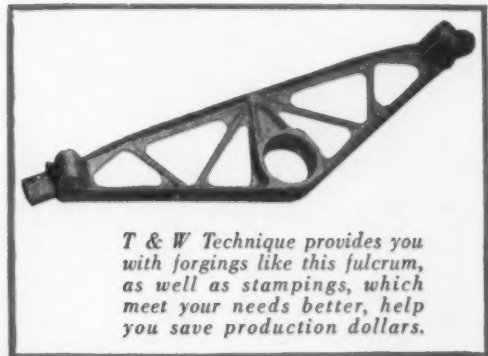
For More Information Circle No. 194 on Inquiry Card—Page 17

Two-stage oil pan, 29" long, 11" wide, 13" deep, for military trucks; produced as stampings by T & W TECHNIQUE. Inset shows main stamping before trimming.



T&W TECHNIQUE can save production dollars for you

● If you buy stampings or forgings, then you want to know all about T & W Technique. Benefits from T & W Technique come to you in many ways—in effective design and engineering service, in extra skill which completes hard-to-produce parts without delay, in quality control, in delivery on schedule. But, always, forgings and stampings from T & W are likely to meet your needs so well that they cost you less at the point of assembly.



T & W Technique provides you with forgings like this fulcrum, as well as stampings, which meet your needs better, help you save production dollars.



STAMPINGS
T&W
FORGINGS

TRANSUE & WILLIAMS

Over 50 years of experience

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TO: Transue and Williams, Alliance, Ohio
Please let me know what "T & W Technique" can do for us. We are interested in

☐ Forgings ☐ Stampings

Name _____

Company _____

Street _____

City _____ Zone _____ State _____

1305

T & W DEEP DRAWN STAMPINGS AND FORGINGS USUALLY COST LESS AT THE POINT OF ASSEMBLY

For More Information Circle No. 195 on Inquiry Card—Page 17

JANUARY, 1956

57

when you need a *Special* motor...contact **DOERR**

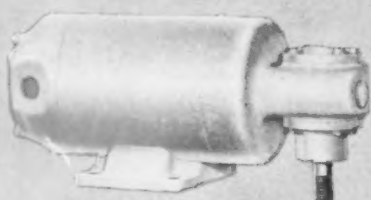
Over 95% of Doerr's production consists of motors with one or more special features

Rely on Doerr's long and specialized experience to solve your problems. List your specifications. Then let Doerr prove how easy it is to select and receive on-time delivery of motors that *exactly* fill your need.

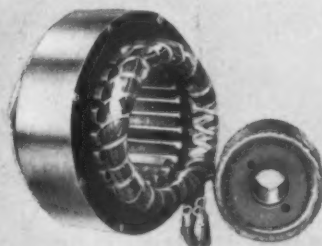
Special features and modifications of all types are available. Present castings, windings and mountings can be adapted to solve new design problems at minimum cost. In addition, Doerr makes a complete line of

standard NEMA ratings, every motor precision-built to the highest standards of quality.

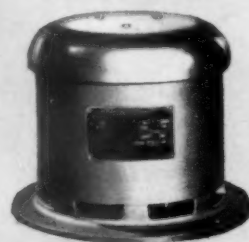
Discover now why leading machinery builders consistently re-order Doerr Motors. Before you buy, just write or call us in for a talk. More than likely we can furnish the top-quality power package you want.



Gearmotor for agitator drive on bulk milk cooler. Stainless steel shaft. Leak-proof seal.



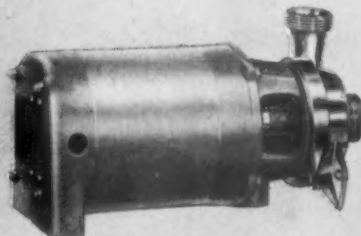
Special diameter motor parts for use in rotary oil burners. Range 1/2 to 5 HP.



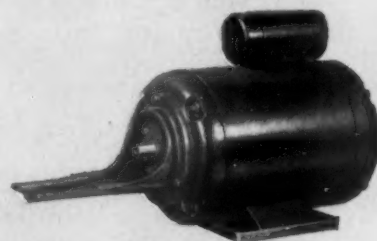
Floor machine motor. Low contour—high torques—pleasing appearance.



Doerr motor with special mounting used on leading 10" tilting arbor saw.



Sanitary dairy pump motor . . . Doerr-Designed to customer's specifications.



Special pump bracket eliminates mounting and alignment problems. Saves space and weight.

Special and standard electric motors from 1/30 to 5 HP that *exactly* meet your needs.

You Get **MORE** with Doerr!

Write for New Bulletin
on Electric Motors
Without Obligation

DOERR
Electric Corporation

CEDARBURG, WISCONSIN

All-weather Brown thermocouple head saves time and trouble

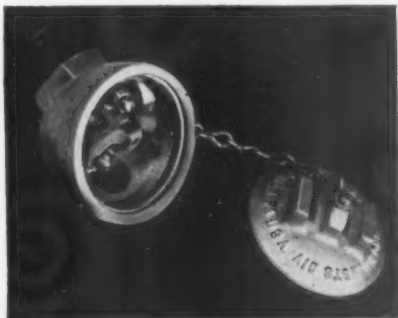
Like the other function-designed supplies in the Brown pyrometer accessories line, the screw type thermocouple head is engineered for the top in utility and convenience.

It can't freeze or rust. Threads are cut on the *inside* of the head, where they are protected from external moisture and corrosive atmospheres. The threads are plated and enameled *after* machining . . . to assure that a complete protective finish covers the thread surfaces. The entire head is hot dip galvanized and enameled for maximum weathering properties. A heat and moisture resistant gasket seals the thermocouple and extension wire connections from the damaging effects of outside atmospheres.

It's built for convenience. You need no special tools. The slotted head makes it easy to remove or to tighten the head without using a wrench. A chain connects the head to the base . . . prevents waste of time for recovering a head that drops off.

It's versatile. It can accommodate terminal blocks for either single or duplex thermocouples or resistance thermometers.

It uses standard pipe thread outlets, and is interchangeable with other heads.



The Brown screw type thermocouple head is recommended for outdoor service, and for applications where atmospheres are corrosive. Its general versatility, however, makes it useful in so many other installations that you should consider it for any spot where thermocouple connections may give trouble. Your local HSM will be glad to look over the requirements of your specific location, and to help you choose the type of thermocouple head that best fits the job.



Here's why it pays to know your



HOWARD PALMER, at right, HSM (Honeywell Supplies Man) in the Philadelphia area, tells Philip Keidel, General Manager of Robert Wooller, Dresher, Pennsylvania about the corrosion-proof construction of Brown Screw Cover Type Terminal Heads for thermocouples.

The HSM Plan for buying pyrometer supplies not only assures you of getting the best in quality from the complete line of Brown accessories . . . but, through personalized analysis of your specific problems, it places all your supplies purchasing on a planned basis that can cut your inventory needs, simplify your paper work, and often reduce overall costs substantially.

Ask your local HSM to discuss how this plan can operate in your own plant. Call him at your nearby Honeywell office . . . as near as your phone.

MINNEAPOLIS-HONEYWELL REGULATOR Co., *Industrial Division*, Wayne and Windrim Avenues, Philadelphia 44, Pa.—in Canada, Toronto 17, Ontario.

● REFERENCE DATA: Write for the booklet, "The HSM Plan" . . . and for Pyrometer Supplies Buyers' Guide No. 100-6.

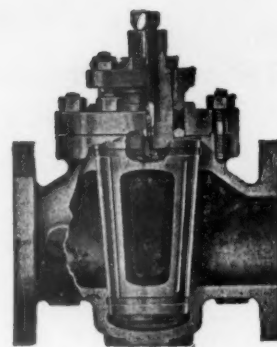


MINNEAPOLIS
Honeywell
BROWN INSTRUMENTS

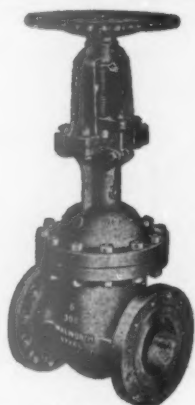
First in Controls

● VALVES

● PIPE FITTINGS



Walworth
Lubricated Plug Valve



Walworth
Steel Gate Valve



Walworth
Iron Body Gate Valve



Walworth
"500 Brinell" Bronze Globe Valve



Walworth
Iron Body Saddle Gate Valve



Walworth
Cast Steel Flanged Fittings

Walworth manufactures a *complete line* of valves and pipe fittings: all made to the highest standards of quality, both as to dimensional accuracy and metallurgical properties. In design, construction, and performance, Walworth products reflect more than a century of experience in the manufacture of quality valves and fittings.

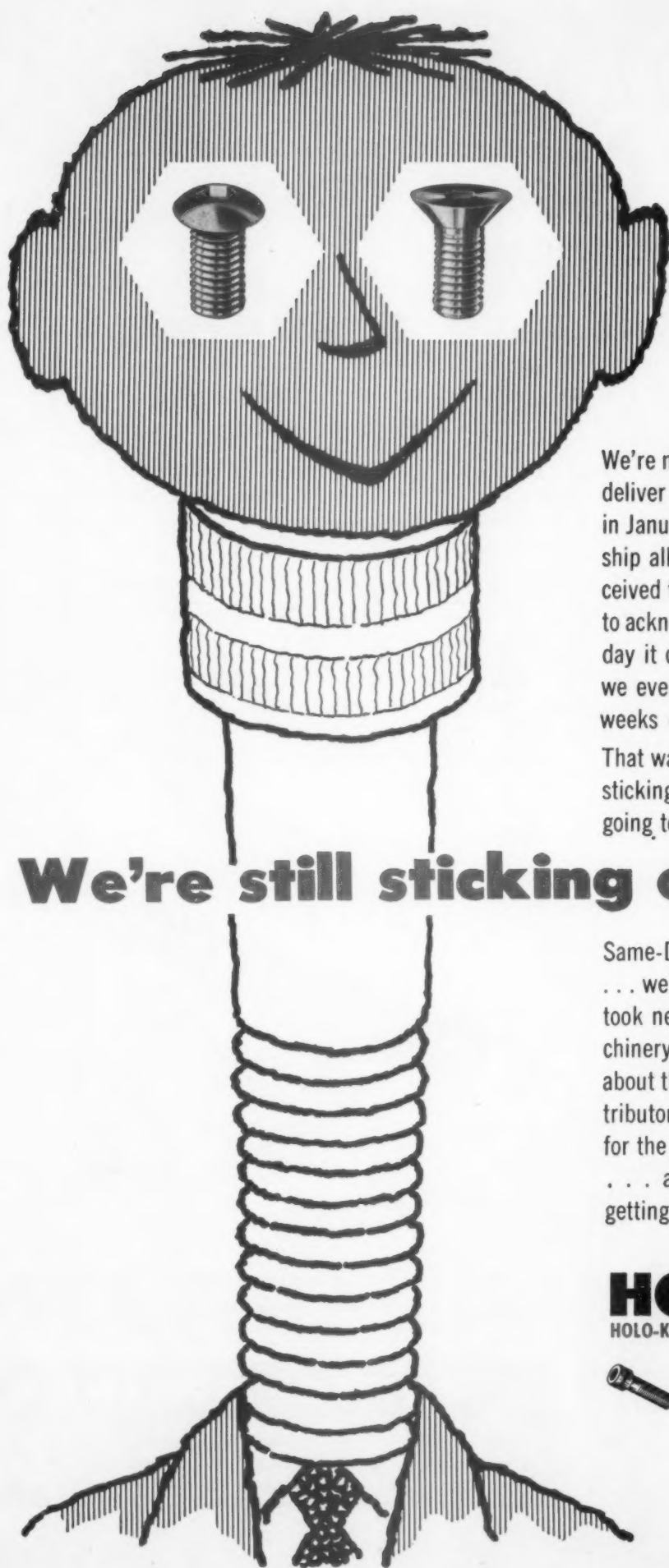
Your Walworth distributor will give you full information on the *complete line* of Walworth steel, iron, and bronze, and special alloy valves and pipe fittings; also Walworth Lubricated Plug Valves, and Walseal* valves, fittings and flanges. Ask for this information today.

*Patented—Reg. U. S. Pat. Off.

WALWORTH

valves and fittings

60 EAST 42nd STREET, NEW YORK 17, N. Y.



We're not a bit worried . . . because we really deliver SAME-DAY SERVICE! It started back in January, 1954, when we boldly promised to ship all standard items the same day we received the order. On top of that, we promised to acknowledge each inquiry by wire the same day it came in. And without blinking an eye, we even promised to ship "specials" in four weeks or sooner!

That was a pretty big order and our neck was sticking out a mile! But we did it—and we're going to keep right on doing it.

We're still sticking our neck out!

Same-Day Service didn't happen overnight . . . we planned for it as far back as 1951. It took new packaging, new methods, new machinery and even a new plant wing to bring about this unprecedented H-K service for distributors. We planned, organized and trained for the day when we could stick our neck out . . . and not have to worry a bit about getting it chopped off!

HOLO-KROME

HOLO-KROME SCREW CORP., HARTFORD 10, CONN.



LOOKING FOR A SPRING?

One good place to go would be America's famous Yellowstone National Park. For here, among more than 2-million acres of natural grandeur are 3000 geysers and springs, providing some of nature's most amazing spectacles.

Still another good place—if you're a manufacturer and are looking for springs—would be your nearest Wickwire sales office.

They can supply you with springs in any size, shape or design, for product application in industry, the farm or the home. Let them handle your requirements—standard or special. Like numerous other manufacturers, you'll find you save yourself time, trouble and expense when you specify Wickwire Springs.



THE COLORADO FUEL AND IRON CORPORATION—Denver and Oakland
WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo • Chicago
Detroit • New Orleans • New York • Philadelphia

**WICKWIRE SPRINGS
AND FORMED WIRES**

PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION



3552

For More Information Circle No. 200 on Inquiry Card—Page 17



Q. What's new in grinding?

**A. B-11 resinoid-bonded wheels
—for many grinding jobs**

Q. What's new about B-11 wheels?

A. Their great new resinoid bond, improved uniformity and balance, new "TOUCH of GOLD" performance-benefits

Q. What is the B-11 bond?

A. It's the latest Norton resinoid bond. Wheels made with it are excellent for snagging, disc grinding, heavy weld grinding, thread grinding, cam grinding, centerless grinding, roll and surface grinding.

Q. Why?

A. Because B-11 wheels are more uniform in structure, with better balance. As a result, they grind cooler and faster. And on portable machines they "hug that work" closer, with less vibration and bounce.

Q. What about those "Touch of Gold" benefits?

A. They're the direct result of the B-11 wheels' more efficient grinding action. In precision grinding this means im-

proved surface finish, greater accuracy, more pieces per dressing. In rough grinding it means less operator-fatigue and longer wheel life. All these benefits add up to more profitable grinding for you.

Q. Any other advantages of B-11 wheels?

A. Many others. For example you get closest possible duplication. Hardness increments are evenly spaced throughout the entire grade scale. And B-11 wheels can be supplied in half-grade increments, making it even easier for you to choose exactly the right wheel for every job.

Q. Sounds fine—what about more information?

A. Your Norton Distributor will gladly give you the whole story on the new B-11 wheels. Or write us direct.

NORTON COMPANY, Worcester 6, Mass. Distributors in all industrial areas, listed under "Grinding Wheels" in your phone book, yellow pages. *Export:* Norton Behr-Manning Overseas Incorporated, Worcester 6, Mass.

W-1778

NORTON
ABRASIVES

*Making better products...
to make your products better*

NORTON COMPANY: Abrasives • Grinding Wheels • Grinding Machines • Refractories
BEHR-MANNING DIVISION: Coated Abrasives
Sharpening Stones • Pressure-Sensitive Tapes

Wagner®

ELECTRIC MOTORS

...the choice of leaders
in industry

New NEMA Frames
Standard and Explosion-proof



Type EP
215 Frame

Wagner Totally-Enclosed Fan-Cooled Motors

cut maintenance time and costs

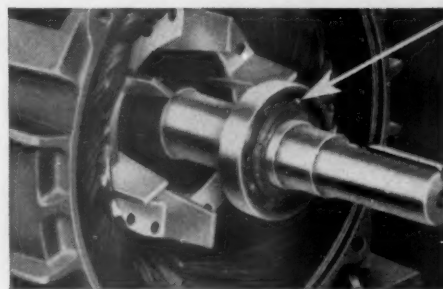
Check the features of the new *Wagner Type EP Totally Enclosed Motor*. They spell the difference between needless expenditures in maintenance time and costs... and a definite savings in motor upkeep and repairs. You'll find that for general industrial use where dust, dirt, filings, abrasives, steel chips or moisture are present, the Wagner Type EP Motor gives steady, troublefree performance and longer service life.

Wagner Type JP Explosion-Proof Motor... has the same quality construction as the Type EP—plus added features which make it completely safe to operate where explosive dust, gases or vapors are present.

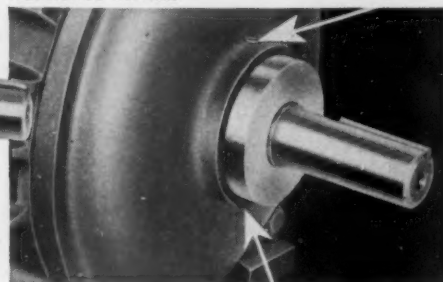
Both Type EP and JP Wagner motors are available in ratings up to 250 horsepower. For complete information, just call the nearest of our 32 branch offices, or write for Bulletin MU-203.

Wagner Electric Corporation

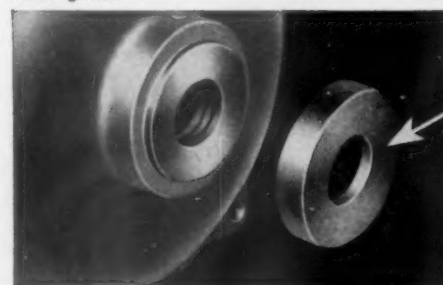
6360 Plymouth Ave., St. Louis 14, Mo.



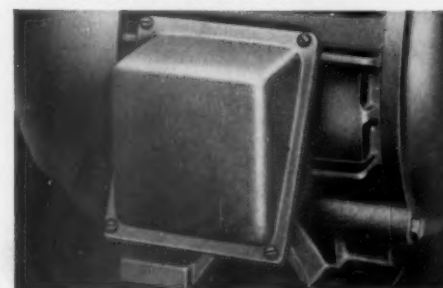
1 HEAVY-DUTY BALL BEARINGS—Highest quality bearings of more than ample capacity provide long, troublefree service.



2 BEARINGS CAN BE RE-LUBRICATED—Wagner motors can be re-lubricated when necessary to prolong bearing life.



3 BEARINGS STAY CLEAN—Both ends of these motors are equipped with running shaft seals, a machined collar mounted on the motor shaft.



4 EASY TO CONNECT—Large diagonally-split conduit box provides ample room for making connections. Leads are permanently identified.

5 NO GREASE LOSS—Bearing housings have effective seals to prevent escape of grease.

6 RIBBED FRAME—Ribs on the corrosion-resistant cast iron frames add mechanical strength and increase the surface area for more efficient cooling.

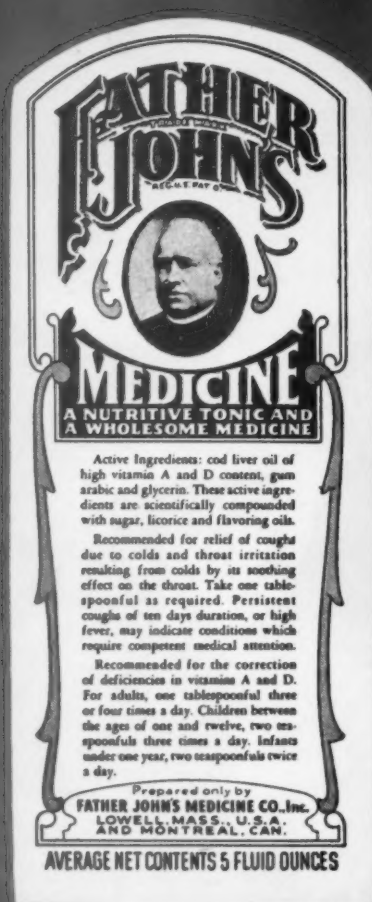
BRANCHES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES

M55-18

ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES • AUTOMOTIVE BRAKE SYSTEMS—AIR AND HYDRAULIC

For More Information Circle No. 202 on Inquiry Card—Page 17
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For More Information Circle No. 203 on Inquiry Card—Page 17→
PURCHASING



BUILDING PACKAGING ATMOSPHERE...

Labels are like people and places. They have the same ability of creating atmosphere — the power to generate definite moods and influence our thoughts.

Take the Father John's label, one of the 60,000 handled by Ever Ready this past year. Here is an atmosphere of confidence and substance. And, this atmosphere which is so important in selling is attained in a number of ways.

LABELS CREATE ATMOSPHERE . . . through *color* which can suggest fragrance, style and temperature . . . through *typography* reflecting comedy, formality, and strength . . . through the *paper* on which labels are printed . . . through *pictures* like the Father John's label . . . through *shape and size* . . . through their relationship with the glass, plastic, or metal *composition of the package* . . . through the *contrast or similarity* of the label with the color of

the product . . . we could go on and on and on into the night.

The atmosphere created by a package is not the result of any one factor — color, size, illustration on the label — but, rather, it stems from the careful integration of these separate elements. Label engineering is an art which hones to a sharp edge only through experience. That is the reason for Ever Ready's pre-eminence in this field. We produce more than 15,000,000 labels a day!

If you have any kind of label problem, why not call, write or visit Ever Ready today. We'll be happy to work with you.

WITHOUT OBLIGATION, we'd like to send you:

- ☐ The Story of 8 Important Red-E-Stik pressure sensitive applications
- ☐ A Label Idea Kit
- ☐ Samples.



EVER READY LABEL
CORPORATION

117-21 EAST 30TH STREET, NEW YORK 16, NEW YORK



How not to explode a fuel tank

Cleaning out airliner fuel tanks can be a risky job. Fumes from the fuel, or from the cleaning solvents used, are combustible. One spark from a defective cord on a power tool or electric light, and you've had it.

Hazacord, the portable electric cord made by a division of The Okonite Company, is specified by Safety



Engineers for such jobs. Protected by an outer neoprene sheath which has been cured in a metal mold, Hazacord will outlast ordinary electric cords many times over. Hazacord is just one of many quality electrical cords and cables made by The Okonite Company and its divisions. The Okonite Company, Passaic, N. J.


3313





where there's ELECTRICAL POWER

...there's OKONITE CABLE

For hose  to handle thick molasses, 

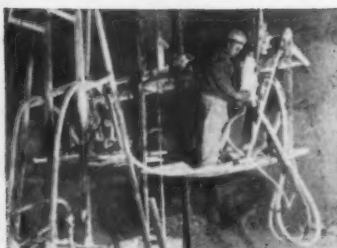
Liquefied petroleum  gases,

Which demand strict safety measures, 

Air or steam at higher  pressures,

Acids, oils  or alkalis,

You'll be wise  to standardize
on NYB&P!



NYB&P Para Air Drill Hose—neoprene tube, multiple plies of extra-strength rayon, tough abrasion-resisting rubber cover—safely handles high pressures.



Ammonia, nitrogen, high-pressure oil and liquefied petroleum gases are carried safely by NYB&P's Indestructible® H.P. Wire Braided Hose.



NYB&P Double Diamond Sand Blast Hose has extra thick "cold rubber" tube, to resist abrasive effects of sand or steel shot blasting service.



NYB&P Oxygen Charging Hose withstands intense heat as it conveys oxygen to promote combustion in 3000° F steel furnaces.

NYB&P makes hose to carry anything that flows... Your nearby NYB&P Distributor has nearly 100 different hose constructions to select from... in many sizes... for any industrial use. By supplying you with the one that matches your requirements exactly, he can help you get longer, more satisfactory service and better value for your hose dollar! For your NYB&P Distributor's name and address, see the yellow pages of your phone book or write to address below.



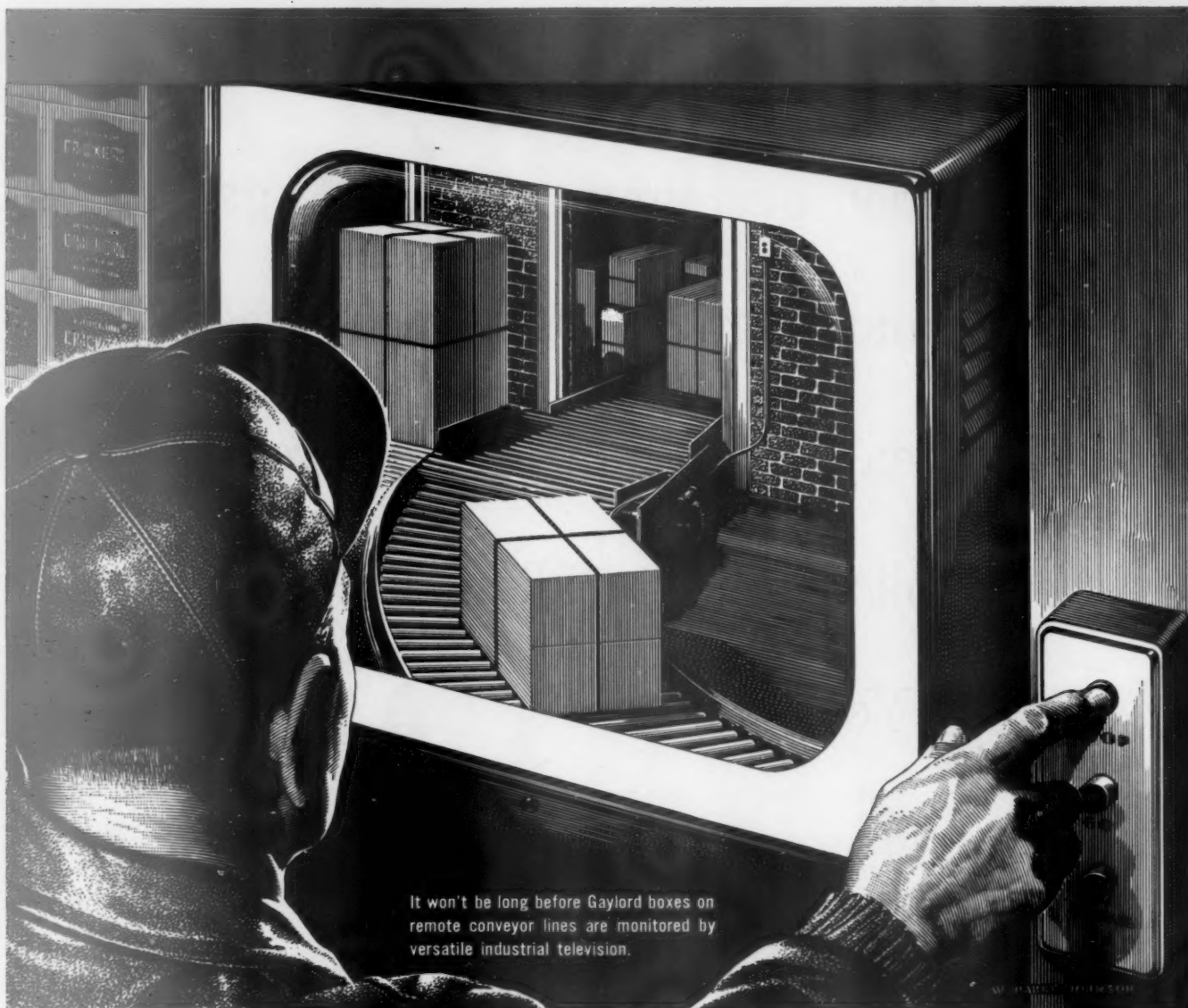
"TIMING®" BELT DRIVES & V-BELTS

NYB&P INDUSTRIAL RUBBER PRODUCTS

NYB&P

NEW YORK BELTING & PACKING CO. 1 Market St., Passaic, N. J.

America's Oldest Manufacturer of Industrial Rubber Products



It won't be long before Gaylord boxes on remote conveyor lines are monitored by versatile industrial television.

WELL-BEHAVED BOXES...



...are vital to modern, mechanized handling methods. As operations become more automatic, interruptions are more costly. Precision-built Gaylord containers are dimensionally accurate and structurally strong to speed packing and handling... prevent jam-ups.

Gaylord container specialists will be glad to work with you in selecting or developing "well-behaved boxes"... for maximum manpower-saving efficiency. Call your nearby Gaylord office.

CORRUGATED AND SOLID FIBRE BOXES • FOLDING CARTONS • KRAFT PAPER AND SPECIALTIES • KRAFT BAGS AND SACKS

GAYLORD CONTAINER CORPORATION ★ ST. LOUIS

DIVISION OF CROWN ZELLERBACH CORPORATION

For More Information Circle No. 206 on Inquiry Card—Page 17

The New Science of Purchasing

THE basic objectives of good purchasing were defined many years ago—to procure the right material, of the right quality, in the right quantity, at the right time, from the right source, at the right price.

There has been no reason to change this definition. It is as sound today as when it was first compiled. But from the very beginning there has been a great need to sharpen it. What is the “right” material, quality, quantity, time, source, and price? In all too many cases, the only answer to this question lay in the buyer’s personal judgment. His only means of getting a satisfactory answer was through continuing search, accumulated experience, and more skillful negotiation.

If the buyer kept this question in the forefront of his thinking and action, he was pretty sure to improve his purchasing performance, to come closer to “right” in his decisions. But he could rarely be sure that his latest and best decisions were in fact “right” in any absolute sense. Every improvement raised the disturbing thought that perhaps he could and should have done even better. He had no satisfactory basis for evaluating his performance and convincing management of the rightness of his decisions and actions. This has been one of the biggest hurdles in the way of purchasing recognition and progress. No measuring stick is worth very much without objective standards of measurement.

Over the years, many useful techniques have been developed that help in determining what is “right” in respect to these various phases of a purchase, and thus help in setting standards of performance. The new science of purchasing consists in correlating these criteria and applying these techniques to do a “right” purchasing job. This makes it possible:

- to set specific targets of performance;
- to develop tools and procedures for attaining them; and
- to measure the degree of attainment.

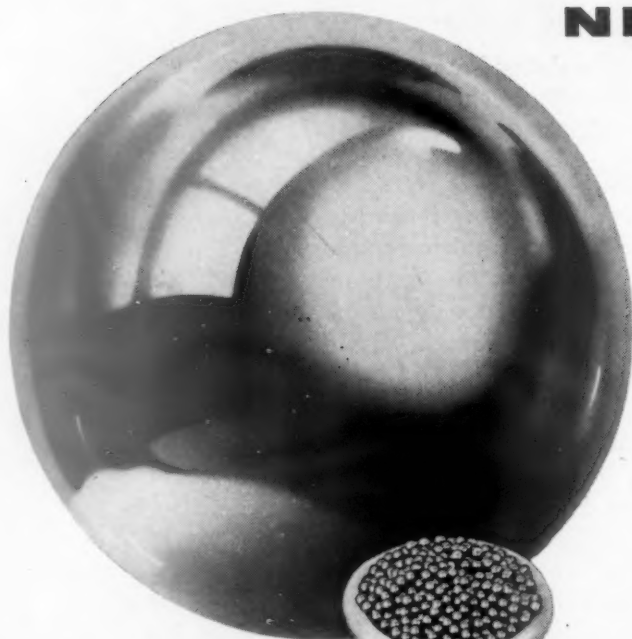
Science in purchasing does not minimize the importance of personal knowledge, judgment, and skill. It broadens the scope and raises the standards of all these factors. And it places on the purchasing man the additional responsibility of administering his procurement program so that it will measure up to these provable standards. This is purchasing’s great opportunity in management.

Stuart F. Henrity

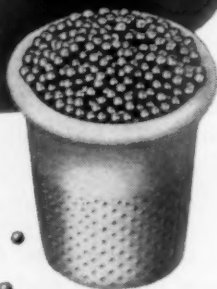
FACTS

about

NEW DEPARTURE STEEL BALLS



New Departure steel balls are produced in a wide range of sizes. The thimble contains about 3,000 balls one millimeter in diameter. There is enough steel in the large ball to make 156,660 of the tiny balls.



**Available in any quantity
to fit your specifications
for grade, size and accuracy!**

When industry wants steel balls of proven accuracy and dependability, it is only natural that they turn to New Departure, leading producer of ball bearings and therefore thoroughly experienced in the manufacture of precision balls. Today, New Departure provides industry with high-carbon chrome and stainless steel balls in a wide range of sizes and specifications.

New Departure balls are produced from the finest high-carbon chrome steel. AISI Type E51100 steel, specially made for New Departure, is heat-treated to achieve the proper hardness and toughness for maximum strength and life in the finished product. Stainless steel, AISI Type 440C, used by New Departure results in balls of much improved hardness and load-carrying ability.

In addition to producing the finest steel balls available, New Departure will fill volume orders for balls of special materials such as high-nickel or cobalt-base alloys, tool steel and others.

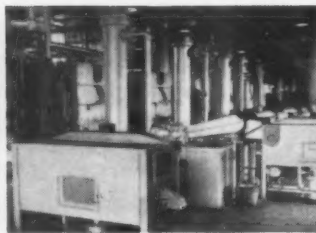
NEW DEPARTURE • DIVISION OF GENERAL MOTORS • BRISTOL, CONN.



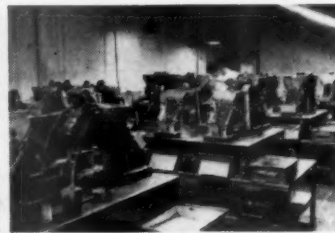
Steel ball wire is drawn through dies to assure uniform diameter and roundness.



Precise control of grain flow is obtained with these Ball Heading Machines.

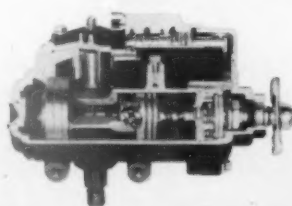


Balls are heat-treated, quenched in oil or water, then tempered in electric furnaces.

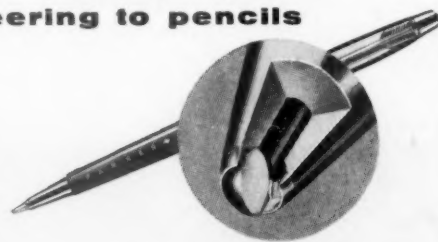


These gauges sort balls into lots according to required diameter limits.

Applications range from power steering to pencils



The unique advantages of New Departure steel balls are utilized in many applications ranging from heavy-duty bearings to the new liquid lead pencil. To accommodate these applications, New Departure steel balls are offered in sizes ranging from .025 inch to 1 7/8 inches in diameter.



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give company connection anyway, for circulation classification records.)



The old debate over whether the purchasing department should be staffed by technical experts or skilled negotiators may go on for years and years. But one large manufacturing company feels it has solved the question successfully and profitably with a program called **Purchase-Engineering**. This arrangement puts a team of technicians right in the purchasing department, to act as engineering assistants to the buyers, who are left free to do their primary job. A number of other companies use the same approach. Such a group provides not only technical liaison among purchasing, engineering, and vendors, but functions as a value analysis unit for the company. Read about the system on page 76.

A somewhat different approach to Cost Reduction through the blending of various skills is described on page 99. Hamilton Standard's Project Target Costs uses a committee of shop-trained specialists to set up costs for purchasing to shoot at—a system that is applicable to many different companies.

Lack of manpower, often the result of management's inability to grasp the full significance of the purchasing function, has a restricting effect on many departments. "We can't do this because we haven't the trained personnel for it" is a familiar argument when a new or advanced idea is proposed. Two new scientific buying techniques you can install in your department without adding a man are described in this issue. First is a method of setting Economic Order Quantities, on page 80. Just follow the instructions



and you can develop an invaluable tool for improving your buying.

The **Product Price Index** is another device that broadens the scope of purchasing's contribution to its company. Yet, the fact that it takes a little initial hard work to get an index started has scared a lot of purchasing people away from it. Starting on page 114, you can learn how much a product price index will help you in forecasting costs and measuring performance—two basic problems for which management is constantly seeking answers.

Occasionally, purchasing departments employ **Vendor Rating** in a shortsighted way. They use it more as a weapon for squeezing prices than as a legitimate, intelligent method for improving suppliers' performance. To get the full, long-range benefits of vendor rating, however, you have to be sure it is done absolutely impartially and accurately. How a relatively small department operates a system of rating vendors that has already been of great help to both buyers and sellers is covered in an article on page 88.



Some information you need for a correct appraisal of certain of your vendors is not always directly available from them. **Financial Analysis** of suppliers, for example, is often necessary to determine whether you are taking a long risk by dealing with them. Beyond the cautionary aspects, this analysis enables you to do a broader, more creative job of purchasing. The basic principles of financial analysis and how to apply them make up the article starting on page 92.

1955 PURCHASING INDEX NOW READY

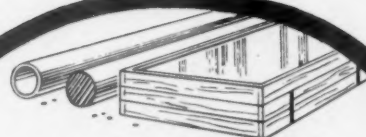
A complete index of all the major editorial material that appeared in **PURCHASING** during 1955 is now available. The index is a handy reference to articles covering all important phases of purchasing—administrative, legal and economic. Copies may be obtained without charge by writing to: Editorial Department, Purchasing Magazine, 205 E. 42nd St., New York 17, N. Y.

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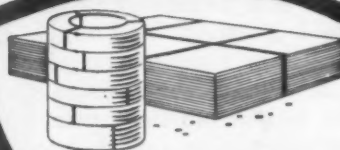
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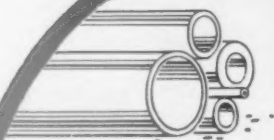
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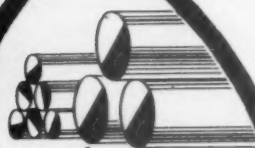
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For More Information Circle No. 208 on Inquiry Card—Page 17



Purchasing Science

gives the Right Answers

YESTERDAY'S purchasing agent, faced with the job of procuring materials and supplies to satisfy the complex requirements of his company, usually had to "play by ear." He had to pit his judgment and experience against a bewildering array of material and market variables, the inertia of traditional usage, design and method; the 3-way conflict between seller's claims, buyer's evaluation, and user's prejudice. Neither he nor his management had any real knowledge of how good a job he was doing.

Today's purchasing agent has scientific standards to guide his actions, to challenge his effort, to support his decisions, to measure the quality of his performance and to prove his contribution to profitable company operation.

He has a *new* approach to the old questions:

What is the Right Material to Buy?

~~We've always used this—why change?~~

~~It's on the blueprint—let the vendor figure it out for himself.~~

~~The engineers can work it out with the vendors.~~

~~We just follow our competitors.~~

~~If we change, we might get problems.~~

Is it the best material for the purpose?

Does it represent value?

What new materials will improve our product or lower our cost?

Do relative costs of various materials make substitution economical?

Can we stock fewer materials by combining requirements?

Do we keep engineering and the shop informed on new developments?



What is the Right Quantity to Buy?

The superintendent likes to have plenty on hand.

We have to have an office force anyway, so why not keep them busy issuing orders?

We get a discount on carload lots.

As long as we have storage space, let's use it.

We can always issue another order to pick up supplies from a local dealer.

If the requisitioner puts down the wrong amount that's his responsibility.

Let's just get what we need, the vendor will store the rest for nothing.

Do we pool requisitions when we can to get the best quantity price break?

Do we know the costs of ordering, receiving, and carrying inventory?

Do we know how to figure economic order quantity?

Do we weigh EOQ against quantity discounts to get best value?

Do we challenge requisitions that look out of order?

Are we soliciting vendors for special deals on quantity orders—on stocking items it would cost us money to carry in inventory?

What is the Right Quality to Buy?

You can't go wrong by buying the best.

Our suppliers aren't complaining about rejections—everything must be all right.

Let the inspectors worry about quality—it's not our job.

If it's no good we send it all back so it doesn't cost us anything.

We save by buying the cheapest. If no one squawks everything is OK.

Do we know exactly what we're getting?

Are we paying for quality we can't use?

Are our specifications precise on essentials, flexible on non-essentials?

How about working with quality control to set up vendor certification and cut inspection costs?

Do shop people know they'll get follow-up action from us if they complain about defective materials?

Do we ask vendor help in licking quality problems?

Do we try to coordinate our inspection procedures with theirs?

What is the Right Source to Buy From?

We've been doing business with them for 20 years.

I like this salesman.

They make mistakes, but are always willing to make adjustments.

The company needs the business. They'll make concessions.

It's smart to send out a flock of inquiries.

We'll shop around to keep 'em guessing and keep 'em honest.

We buy from customers.

Engineering puts the source on the requisition—why worry?

We get three sources for everything—we're bound to be right 33⅓% of the time.

Are we up-to-date enough on a given industry to know suppliers are using latest techniques?

Do we visit a new supplier's plant before giving him a sizable order?

Do we check a new supplier's financial status to be sure he is responsible and big enough to handle large orders?

Do we have an objective yardstick to judge vendors on price, quality and service?

Are all salesmen with legitimate business given a fair hearing?

Do we select suppliers who have the know-how to help on engineering and manufacturing problems?

What is the Right Price?

The lowest bidder always get the order.

We're not paying more than any of our competitors.

If the vendor says he's losing money on the job, we know we've got a good deal.

Why bother cutting costs? Our actual prices are included in our product cost estimates.

We're strictly a service function. If no one complains about prices let's leave well enough alone.

Do we keep source on price performance with purchase and product price indexes?

Do we set cost reduction goals and score ourselves accordingly?

Do we help management plan by keeping them informed on future price trends?

Are prices quoted to us based on lowest cost production methods and processes?

Do we check the validity of requested price changes against our own cost estimates?

Are we constantly trying to help suppliers cut their own costs, thus reducing prices?

Have we accurate estimates on what new items should cost before we send them out for quotes? Do we stay within this budget?

The science of purchasing uses formulas, but it is not a formula in itself. It has to be applied to particular companies and particular conditions to get the desired results. On the following pages, PURCHASING presents case studies of successful purchasing illustrating the various areas in which the scientific method can be used. You can apply these methods to your own purchasing program. ►

PURCHASE- ENGINEERING:

Technical Help for Buyers



*24 dowel pins like this
were taken from one type of
vendor, screw machine
companies, and the business
placed with bearing manu-
facturers. The steel was
changed to a bearing
material. This enabled the
new vendors, who are
specialists in
making this
type of part,
to offer a
lower price.*



Result: Annual saving of \$6,000

THE dramatic aspects of cost cutting through value analysis have tended to obscure the trend toward a new purchasing concept of which value buying is merely a part. This broader concept, which opens new responsibilities and opportunities to purchasing people, is still in that stage of development where it is called different names by different users. About the best descriptive term in general use is "purchase-engineering."

What Kind of Technical Help?

The basic aim of a purchase-engineering program, regardless of the form it takes in a particular company, is to bring more competent technical knowledge and assistance into the purchasing department. It is based on a simple idea: a good purchasing man, given good technical help, will turn out the best buying job you can get. In an increasingly complex industrial economy, he'll be able to do more comprehensive and technically correct purchasing.

Assuming that more engineer-

Both purchasing and engineering are special skills, each with particular objectives. But the gap between must be bridged for effective buying. A number of companies have turned the trick with a new buying technique—purchase-engineering.



ing information is needed in the purchasing department, how do you go about getting it? Should old-line, experienced buyers be replaced by engineers—who are already in short supply? Should engineers be brought into the purchasing department gradually as vacancies occur? Is there some middle ground that brings more technical knowledge into purchasing, yet preserves the unique skills and abilities of trained buying personnel?

There is no pat answer for these questions. As can be expected, approaches to purchase-engineering are almost as diversified as the companies that employ them. Special problems call for particular solutions, and the growing number of firms using the new concept have found that it serves them best when adapted to their own needs, rather than copied precisely from some other company.

There are few, if any, instances where an entire group of buyers

has been moved out and replaced by the same number of engineers. That obviously would be throwing the baby out with the bath, since it would scrap a wealth of negotiating ability and buying knowledge that is as essential as any technical know-how that could be brought into the department. Rather than being a progressive move, it would be a reversion to the long-discarded notion that purchasing is merely a clerical function and not a skill in itself.

A more reasonable practice being followed in a few companies is to bring in an engineer to fill a buyer's position in the course of a normal replacement cycle. A large southern chemical company has followed this policy consistently for a number of years, with a good deal of success.

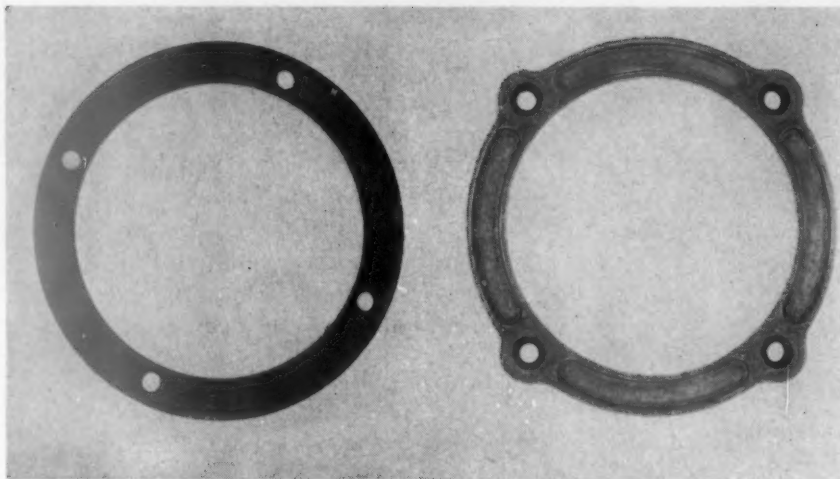
The idea has its disadvantages and dangers, however, if not handled skillfully on a long-range basis. In the first place, the current shortage of engineers makes

it difficult to recruit people from other departments. Secondly, an engineering education does not automatically fit a man for the complex job of buying. There have been cases where "a little knowledge is a dangerous thing"—leading technically trained men to try and bull their way through negotiations that required the utmost amount of delicacy and tact.

Too hasty a decision on putting technical men in as buyers may put you in a position where you have neither a good engineer, nor a good buyer. Only a carefully planned program of training will help you carry out this type of replacement program.

Some Successful Plans

Perhaps the most successful arrangement, altered to meet particular situations, is that of having engineering or technically trained personnel attached to, or working in the purchasing department, on specific projects where



DIE CASTING REPLACES STAMPING—An unusual switch that saved \$60,000 a year was the change from a steel stamping (left) to an aluminum die casting with steel inserts (right). Use of the stamped unit involved high scrap loss and additional machining. Total cost was reduced 80% by use of the die casting.

their specialized information is essential.

One of the simplest variations of this arrangement is used by a well-known machinery manufacturing company. An engineer, brought into purchasing for training shortly after graduation from college, does the buying of accessory motors, controls, etc., which are attached to the company's product, usually at the option of the customer. He also works with the engineering department, as a representative of purchasing, in the specification and procurement of equipment.

Another manufacturing company uses the same type of purchasing engineer to develop new sources of supply and new materials applicable to the company's use.

One of the earliest types of purchase-engineering in the larger companies, like General Electric, was a group of engineers or technicians whose main objective was the reduction of costs through value analysis. Such groups often did no actual buying, but studied purchased parts with a view to reducing their costs through standardization, redesign, use of alternative materials or manufacturing methods, etc.

This approach has been broadened in many places by expanding the size of the technical group and increasing its responsibilities. One large midwestern equipment

manufacturer has put a group of technically trained personnel in the purchasing department to act as "technical assistants to the buyers."

The group is headed by an electrical engineer. On it also are an accountant; a graduate metallurgist; a mechanical engineer; two graduates in business administration; two men with tool room and associated experience; a former factory manager; and a foundry technician. This fairly elaborate system of purchase engineering is, of course, suitable to only the larger concerns, but the principle upon which it operates holds for a company of any size.

Help From Outside the Department

Purchase-engineering is not necessarily a technique that has to be carried out under jurisdiction of the purchasing department. Circumstances of size or internal administration may make it impossible for you to obtain the necessary personnel to work for you in carrying out the program. This should not deter you from trying to work out some arrangement to have technical assistance available to you on a regular basis. After all, the primary purpose of the whole activity is to help the company through better buying, rather than empire-building. Having technical personnel under your control helps, but it should

not be made a prerequisite to an intelligent program of purchase-engineering.

In a relatively small concern like the Ritter Company, a successful purchase-engineering program has two members of the engineering department in constant touch with the purchasing department. These two engineers do not "belong" to purchasing, but they actually spend most of their time there. They perform liaison between the two departments on problems of design, specification and procurement. They are available at all times to sit in on conferences with suppliers, or with the engineering or manufacturing departments. As the chief purchasing officer at Ritter said, "their object is to help us do the correct buying job from the technical side—but at the same time, we have found that their assistance has led us into some substantial cost reductions. We can't begin to measure the many thousands of dollar savings that have resulted from this purchasing-engineering liaison."

An advantage of having technical people from other departments assigned to help do a better, more analytical purchasing job is the opportunity it presents to spread the gospel of value analysis through the company. The phenomenal growth and success of value analysis in General Electric Company has taken in a number of other departments, all of whom have responded enthusiastically to the concept. Value analysis seminars will bring together individuals from engineering, manufacturing, purchasing and cost accounting, working together as a team toward the common goal of a better product at lower cost.

This sharing of skill and knowledge helps to ease purchasing's burden—but in the end it has the responsibility for making the best buy, and such assistance is more than welcome.

Both Sides Benefit

Many others beside purchasing people, of course, benefit when a good purchase-engineering program is established. When the close relationship between sound engineering and good purchasing has been made clear to them, engineers realize that it is to their

own good to cooperate. Manufacturing personnel, also, begin to realize that far from trying merely to trim prices, the purchasing department is actually trying to get the material that will best suit manufacturing needs and at the same time protect the best interests of the company.

No longer does the buyer, out to cut costs, appear to the engineer as a low-price fanatic who doesn't care about quality. And the engineer no longer appears to the buyer's eyes as a quality-crazy spendthrift.

The key then, to an effective program, is getting each group to understand that the other department is his ally, trying to help him do a better job. This requires something in the way of an educational campaign—but in the long run, it is practical experience that brings about full understanding.

Before approaching management with the concept of purchase-engineering, it is best to be prepared with definite ideas as to the type of organization you want. Once having chosen the method—through having engineers as buyers or, more desirable, engineering personnel in the department who can act as liaison on cost reduction programs, specification changes, development of new suppliers, etc.—you can put the people at your disposal on specific tasks or projects.

Among such projects, not necessarily in order of importance, are the following that have been successfully taken up by companies through the purchase-engineering approach:

- Exchange of information and ideas with any and all company groups involved in cost reduction programs. This may be through individual contact, or through the establishment of a cost-reduction or value analysis committee.

- Liaison between purchasing and engineering in uncovering relevant market and price data, new or specialty suppliers for a "problem" part, and new products or processes.

- Supplying of information on purchased finished costs and/or savings to other interested departments, such as accounting.

- Channeling of all engineering

changes to buyers. This permits understanding on both sides as to what is needed and whether it can be obtained on schedule.

- Liaison with engineering on all questions of material deviation.

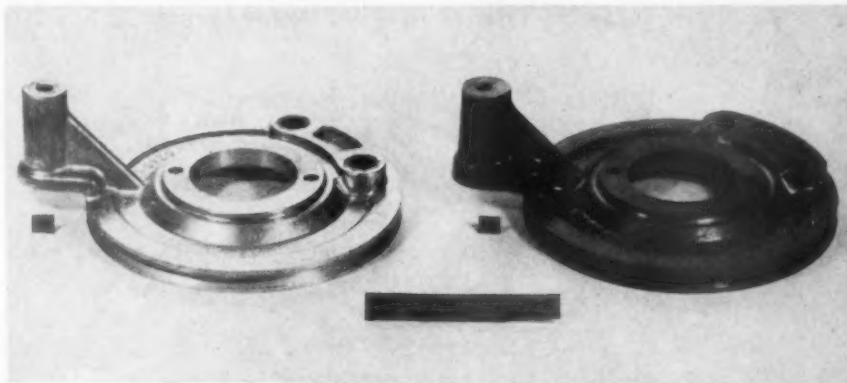
- Coordination with all interested departments—engineering, quality control, laboratories, etc.—on all points of quality control related to buying.

Strong Backing Needed

It should be made clear at the beginning that the purchase-engineer, regardless of how he is used in the department, has a definite job to do and will be backed up on his recommendations if they have any worth at all. He is not

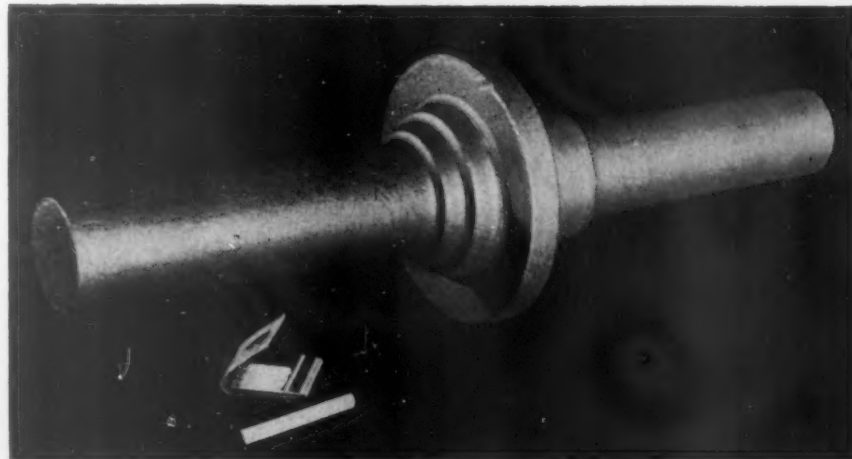
merely a goodwill ambassador, without portfolio and without influence. He certainly has not the authority to impose his ideas on any other departments, or on the buyers. But he must be given the standing and the support that will enable him to do a complete job.

Technological progress in industry is forcing engineering and purchasing together. The purchasing agent with foresight, and with ambition, will make his efforts now to bring about the highest degree of engineering-purchasing cooperation before it is demanded of him. The successful development of a number of purchase-engineering programs indicates that now is the time to start working on your own.

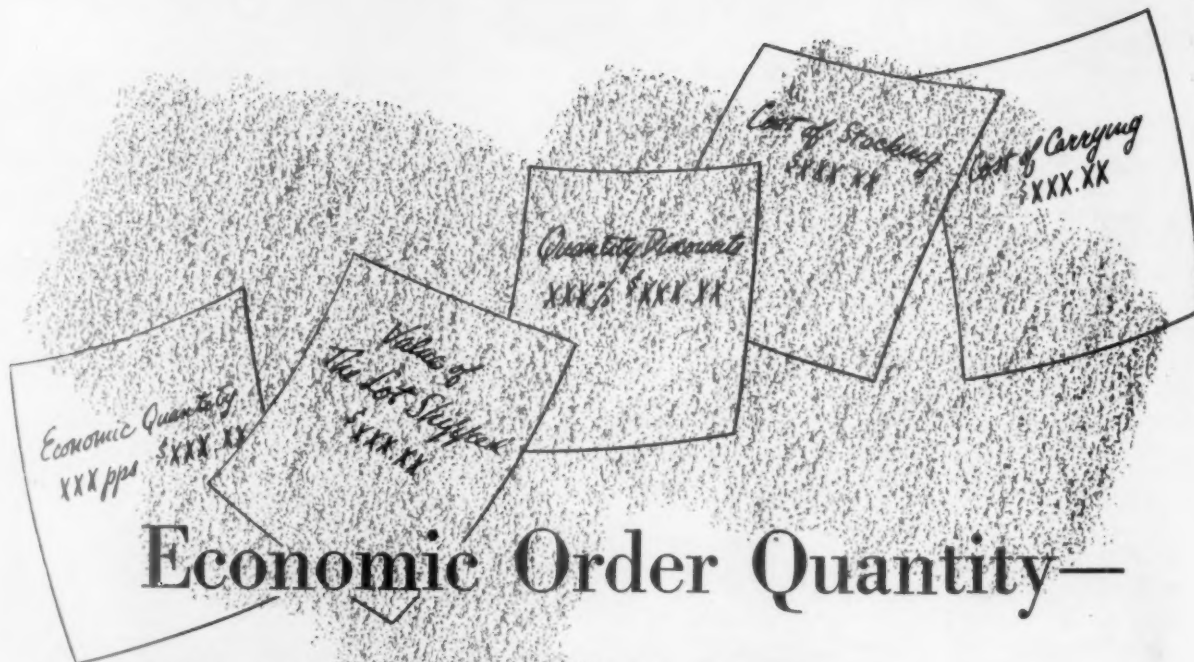


SUBSTITUTE FOR GRAY IRON CASTING—An aluminum die casting (left) was used in place of a gray iron casting for this part. The vast amount of machining previously required was practically eliminated and the total cost reduced almost 80%.

TWO-PIECE DESIGN NOW ONE-PIECE FORGING—Formerly, two pieces were flanged and bolted together to form this part. A vendor suggestion, acted upon jointly by purchasing and engineering, led to adoption of one-piece forging for the part. There were large savings in assembly time, plus a great increase in strength of the shaft.



... in the Right Amount



Economic Order Quantity—

KEY TO LOWER COSTS

Having what you need when you need it without carrying extra high-cost inventory is basic to scientific buying. Here is a simple way of setting your own EOQ—economic order quantity—and saving money and effort.

YOU CAN whittle down purchase costs without getting a single supplier to cut prices. All you've got to do is to buy the right quantity at the right time. This means properly weighing the related factors of purchase price, quantity discount, cost of handling incoming shipments, and cost of carrying inventory. All this adds up to EOQ—economic order quantity.

In recent years, a lot of thought has been given to the problem of economic lots. Skilled mathematicians have analyzed it and come up with some pretty complicated formulae. Here's one example:

$$Q\$ = \frac{Y\$ \Pi}{IC} \sum_{m=k+1}^{\infty} \frac{e^{-u} u^m}{m!}$$

Don't let the above example scare you. Complex mathematical analysis can certainly be useful. But if yours is a reasonably typical purchasing operation, you can get satisfactory results with a much simpler approach. Although it took a great deal of work at the start, Argus Cameras, Inc., of Ann Arbor, Mich., has a system whereby economic order quantity can be easily found. All

Ground Rules for Using EOQ

Getting any new concept into operation brings a lot of problems. When you tackle something fairly complex like EOQ, there's bound to be a greater-than-average number. A lot of confusion can be eliminated by anticipating where difficulties will arise and solving them in advance. Argus, like many other companies, issues specific quantity orders from requisitions and issues releases for a portion of (or sometimes all of) the material on order. This would seem to make for conflict with the economic order quantity. Argus cuts confusion with these "ground rules":

1. The requisition determines the quantity to be ordered and specified on the purchase order. The economic order quantity formula determines the size of lots delivered against the purchase order.

Example: If the purchase order or release is for 60,000 parts and EOQ is calculated to be 28,000 pieces, have shipment made in two lots of 30,000 pieces.

2. When it is reasonably certain the same supplier will get the order on the next requisition, combine shipments from two requisitions to get an economic delivery quantity.

Example: If the economic order quantity is 20,000 pieces and a requisition is received for 10,000 pieces, get it increased to 20,000 pieces provided there is no danger of obsolescence.

3. If the requisition covers a period when production rates vary considerably, then the schedule should be adjusted accordingly. This is particularly important when the unit cost of the part is high and the delivery quantities relatively small.

Example: Suppose the requisition calls for 70,000 pieces with 20,000 to be used in August, 24,000 in September, and 26,000 in October

and EOQ is 28,000 pieces. In this case, a lot of 32,000 should be shipped August 1 and another lot of 38,000 pieces on September 15.

4. When EOQ yields a result of two weeks or less, treat the item as a special case. Unless investigation discloses that the smaller quantity is really advantageous, order a two week supply anyway. When deliveries are frequent, try to cut handling of incoming lots to a minimum and make arrangements to consolidate paperwork for all lots received over a period of time—over a month, for example.

5. When increasing the quantity released for shipment so as to get an economic lot, never exceed 90% of the quantity forecasted in the production schedule. This will cut the risk of bringing in excess stock and still permit shipment of a reasonably economic lot.

6. If the economic lot is more than can be received in a single lot (e. g. one truckload or carload), reduce the quantity to the maximum that can be received in a single shipment.

7. If an item requires further processing after it is received, do not order shipments that are less than the processing lots in the shop.

8. When a supplier has a separate set-up charge for each lot he processes, add this charge to "F", the fixed restocking cost supplied by cost accounting, to determine the economic order quantity.

9. If the EOQ formula calls for more than a six-month's supply in a single shipment, reduce the lot purchased to six months.

10. On expensive and troublesome parts, make a special investigation to make certain the most economic lot is purchased.

the buyer need do is refer to a chart like that on page 83.

Here's how the chart works: The vertical axis shows the value of a month's usage of the part or material for which it is desired to determine economic order quantity. The horizontal axis represents fixed costs incurred by the company in handling each incoming shipment. Because such costs vary with the type of material being handled, Argus has classified the items it buys into four broad categories to figure economic order quantity.

The four fixed cost values that Argus uses are

\$11.70, \$17.50, \$22.50, and \$38.00. The company's accounting department analyzed various types of parts and materials to see how they should be classified. For example, it was assumed that fixed costs total \$17.50 per lot for screw machine parts.

Since he can easily compute the value of a month's usage (by multiplying monthly requirements by the unit standard cost), and knows the fixed cost per shipment, all the buyer need do is look at the chart to find economic lot size. For example, if *F*, the fixed cost, is \$11.70 and *V_m*, the value of a month's usage, is \$700, then the economic lot is a six weeks' supply.

TABLE OF INVENTORY CARRYING COSTS

VALUE OF THE LOT SHIPPED	LENGTH OF TIME \$100 WORTH OF STOCK IS CARRIED												
	1 Week		2 Weeks		3 Weeks		1 Month		6 Weeks		2 Months		3 Months
	10	275 02	275 33	275 50	275 69	276 04	276 39	276 89	277 38				
	15	216 68	216 99	217 16	217 35	217 70	218 05	218 44	218 83				
	20	187 52	187 83	188 00	188 19	188 54	188 89	189 28	189 67				
	30	158 35	158 66	158 83	159 02	159 37	159 72	160 11	160 50				
	40	143 77	144 08	144 25	144 44	144 79	145 14	145 53	145 92				
	50	135 02	135 33	135 50	135 69	136 04	136 39	136 78	137 17				
	70	125 02	125 33	125 50	125 69	126 04	126 39	126 78	127 17				
	100	117 52	117 83	118 00	118 19	118 54	118 89	119 28	119 67				
150	111 68	111 99	112 16	112 35	112 70	113 05	113 44	113 83					
200	108 77	109 08	109 25	109 44	109 79	110 14	110 53	110 92					
300	105 85	106 16	106 33	106 52	106 87	107 22	107 61	108 00					
400	104 39	104 70	104 87	105 06	105 41	105 76	106 15	106 54					
500	103 52	103 83	104 00	104 19	104 54	104 89	105 28	105 67					
700	102 52	102 83	103 00	103 19	103 54	103 89	104 28	104 67					
1,000	101 77	102 08	102 25	102 44	102 79	103 14	103 53	103 92					
1,500	101 18	101 49	101 66	101 85	102 20	102 59	103 03	103 47					

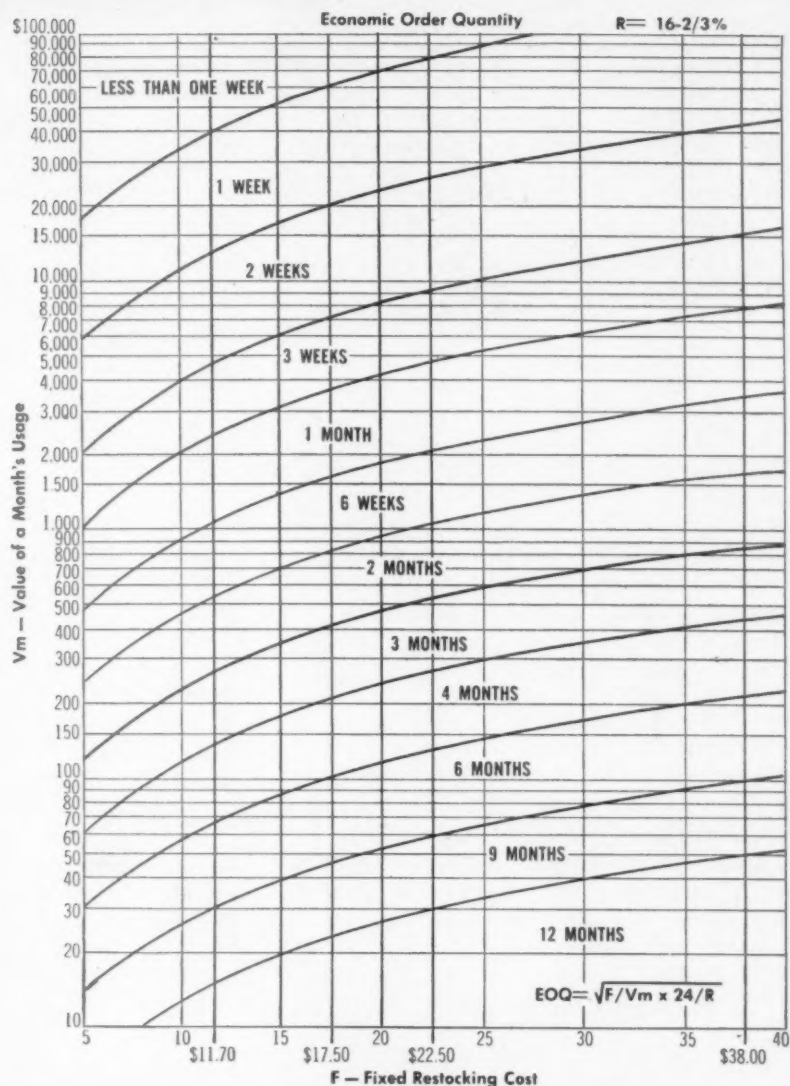
TABLE OF INVENTORY CARRYING COSTS—Argus uses tables like this to find out how much it costs to carry \$100 worth of variously valued lots for different periods of time. This table is based on a fixed restocking cost (F) of \$17.50 and an inventory carrying charge (R) of 16-2/3%.

Useful though the Argus "EOQ" chart may be, it doesn't solve the problem of what to do if a vendor offers a series of prices based on various quantities. Argus also has a scientific approach to this problem. It uses tables which show total cost of carrying \$100 worth of inventory for each of the four F values it uses. By going to the right table, the buyer gets the cost of carrying \$100 worth of inventory for various periods of time and various values of a month's usage. He then compares the increase in inventory carrying cost resulting from buying a larger quantity with the price advantage he is able to get. It is then easy to decide whether it pays to buy the larger quantity at the lower unit price. The sample problem on page 85 shows how the Argus system works in practice.

All this may be wonderful for Argus. But the fact is that Argus' chart and table have no direct application whatever to your operation. To save money with EOQ, you need a chart and table tailored specifically to your operating costs. It's an awful lot of work to start with but your efforts will be well rewarded. After you get all interested departments behind EOQ, you're ready to actually start in on the rather grueling preliminary calculations. Argus' system is based on the formula $EOQ = \sqrt{F/Vm \times 24/R}$. The same basic formula should work for you. As you look at the formula, don't be scared by the square root and the algebraic symbols. The actual calculations, as you will see later, are quite simple. In fact, you won't even have to brush up on learning how to derive a square root!

	4 Months		6 Months	
27.8	277	78	279	17
21.4	219	44	220	83
18.8	190	28	191	67
16.1	161	11	162	50
14.3	146	53	147	92
13.8	137	78	139	17
12.8	127	78	129	17
11.8	120	28	121	67
11.4	114	44	115	83
11.3	111	53	112	92
10.1	108	61	110	00
10.5	107	15	108	54
10.8	106	28	107	67
10.8	105	28	106	67

EOQ CHART—Argus uses this chart to find the right quantity in seconds.



Repeated references are necessary to the various symbols in the formula, so the meaning of each is summarized in the box, "Definition of Terms" on page 84. Since the concept behind some of the symbols is fairly complex, a more detailed explanation should be helpful, however. The hardest to grasp is F , the "fixed" portion of the total costs of getting a given shipment from the common carrier to finished stock inventory.

The total cost of handling any lot consists of both "fixed" and "variable" elements. The "variable" element of cost increases in direct proportion to the number of pieces received. The "fixed" element is independent of the number of pieces. For example, one "fixed" cost is writing a receiving report. This must be done whether 100 pieces are received in a shipment or 100,000.

To find fixed costs for various materials, you need a special study by your accounting department. Because it is a cost that is a segment of other costs, F can't be directly picked off your accounting records. It can never be more than an intelligent estimate based on cost analysis by your controller. Since it varies with the type of commodity being handled, theoretically you would have to figure a separate F value for each commodity. Actually this isn't necessary. All you've got to do is classify your commodities into four or five groups and estimate values for each. Argus uses four.

As was previously explained, V_m is the value of a month's usage of the material. It is easy to calculate. Just multiply the cost of one unit by the number of units used per month.

Definition of Terms

With any algebraic formula, where letters are used instead of numbers, it's easy to get confused as to what each symbol stands for. This applies to EOQ. Though the meaning of each is explained in the text, here's a summary for convenient reference.

$$EOQ = \sqrt{F/V_m \times 24/R}$$

EOQ=economic order quantity in month or decimal parts of a month

F="fixed" portion of total costs of handling a given shipment

V_m=value of a month's usage of material

R=cost of carrying inventory as a percentage of the value of the material

R is the financial cost of carrying inventory and is expressed as a percentage of the inventory value. It includes allowances for taxes, interest, insurance, stores operation, and obsolescence. Needless to say, you'll have to get R from your controller. Accountants aren't consistent in the factors they consider in figuring the cost of carrying inventory. So over-all carrying charges reported by representative companies vary from 5¾% to 35%, 15% is the average figure. Argus uses 16 2/3%.

If your controller advises that your cost of carrying inventory is the same as Argus' 16 2/3%, copy the Argus chart shown in this article and you've got a quick way to figure economic order quantity. If you're among the less fortunate 99% whose cost of carrying inventory is different than Argus', you've got to make your own chart to fit whatever value of R you use.

Plotting Your Chart

To "roll your own," use the formula $EOQ = \sqrt{F/V_m \times 24/R}$. When F and V_m are expressed in dollars (e. g. \$10.50), and the percentage R is expressed as decimal (for Argus, it would be .167), then EOQ comes out in months or decimal parts of a month. For convenience, Argus translates the decimal parts of a month into weeks on its chart (0.5 months becomes two weeks).

Making Your Chart

First step in making your EOQ chart is to draw up a skeleton of a graph like that used by Argus. On the horizontal axis, lay out the various values of F you will be using. Argus draws heavy lines so that its fixed costs of \$11.70, \$17.50, etc., can readily be spotted by the user of the chart. Doing the same thing for your F values is a good idea.

When laying out the vertical axis, be sure you use a varying scale like the Argus example. You note that the distance between 10 and 20 at the bottom of the vertical V_m axis is the same as the

distance between 10,000 and 20,000 at the top. That is, the values on the vertical axis are not laid out in their direct arithmetical proportion. This permits a small chart to cover a wide range of V_m values.

Before you plot the chart, you've got to assume values for two of the variables in the equation $EOQ = \sqrt{F/V_m \times 24/R}$, calculate what the third variable will be by substituting the two assumed values into the formula. Then you plot the chart. You must make enough computations to draw a series of curves similar to those in the example.

One way to do this is to assume various values for V_m and F, compute EOQ, and then plot what EOQ would be for the various assumed values of V_m and F. Your answers for EOQ would likely come out in uneven decimal parts of month. Also, you've got to figure a square root in each calculation.

More Figures Needed

Fortunately, using a little bit of high school algebra, there's an easier way. If you got at least a "C" in the subject, you'll recall that if $EOQ = \sqrt{F/V_m \times 24/R}$, then $V_m = F/EOQ^2 \times 24/R$. With the formula transposed, you can assume a value for EOQ, and then determine what V_m would be for a number of values of F. This will give you a series of points on the chart which can be connected into a curve.

Suppose, for example, you decide to plot the curve for EOQ = one month supply. Using the formula $V_m = F/EOQ^2 \times 24/R$, and assuming a value of 24% for R, then:

If F = \$10.00, $V_m = 10/1 \times 24/24 = \$1,000$

If F = \$20.00, $V_m = 20/1 \times 24/24 = \$2,000$

If F = \$25.00, $V_m = 25/1 \times 24/24 = \$2,500$ etc.

After you locate about six points where EOQ = one month for various values of V_m and F, connect them with a French curve. Do this for EOQ = one week (.25 months), two weeks (.50 months), three weeks (.75 months), one month, six weeks (1.5 months), two months, three months, four months, six months, nine months, and twelve months. You'll wind up with a chart like that used by Argus.

With your own EOQ chart, it's a snap to find economic order quantity in seconds. But you still lack a scientific tool to help you decide whether it's profitable to accept a supplier's offer to take a six month's supply at a lower price when your EOQ chart tells you to limit your buy to one month's supply. To get one, you've got to develop tables to show the cost of carrying \$100 worth of inventory for various periods of time in relation to the value of various sized shipments. You'll need a separate table for each F value you use. Thus, Argus has tables for F values of \$11.70, \$17.50, \$22.50, and \$38.00.

Set up your table like the Argus example illustrated in this article. On the vertical axis, list

the same values for V_m that you have in your EOQ chart. Remember, however, that, in the table, these figures will represent the value of a given shipment *not* the value of a month's usage as in the EOQ chart. The horizontal axis shows how long a shipment would last based on current usage of the item. Use the same time periods that you used for economic order quantity in your EOQ chart.

The easiest way to explain how to make the calculations for this table is to take a few examples. So let's assume you're making a table for shipments where F is \$10.00 (you'll need a separate chart for each F value, remember). Let's make R 20%. If the value of the lot is \$100, it would then cost \$120 to carry \$100 worth of inventory for 12 months. The \$120 total includes: (a) \$100 for the material itself, (b) \$10 for F , and (c) \$10 for R .

When you think over this example, you might get confused. The \$100 for the material and the \$10 for F are obvious enough. But what about the \$10 for R ? We assumed that R was 20%, and 20% of \$100 is \$20. Why then did we just add one-half that amount or \$10 for R ? Stop and think what happens to inventory when it comes into a plant. Obviously it's used. If it's used at a constant rate, then the average inventory during the period between buys would be but 50% of the beginning inventory.

To clarify this, suppose a material is reordered

when the stock drops to \$10 and a \$100 lot is bought. Beginning inventory is then \$110. Another lot isn't bought until the stock drops back to \$10—which, in this case, is 12 months later. Presumably \$50 worth of material is used up in six months. Therefore, on the average, we only have half of the \$100 lot on hand during the 12 month period. Consequently R is figured by taking 20% of \$50 not 20% of \$100. So, when figuring R , always use one-half the total you would normally expect to get.

Harder Examples

Remember our table is based on carrying \$100 worth of inventory for various periods. *This is simply an arbitrary figure chosen to give us a starting point from which cost comparisons involving other amounts can be made.*

Let's suppose the value of each lot shipped is \$10. To get \$100 worth of inventory in this case, we'll obviously need 10 lots. So the F factor is based on 10 lots and it is $10 \times \$10$ or \$100. As in the previous example, R for 12 months is one-half of 20% of \$100 or \$10. Total cost of carrying \$100 worth of the \$10 lots for 12 months is then $\$100 + \$100 + \$10$ or \$210.

You learn one important thing from this example: When the value of the lot is less than \$100, you've got to allow for enough lots to bring the
Please turn to page 300

EOQ at Work—A Sample Problem

Suppose you are buying a screw machine part. A supplier gives you this quotation:
5,000 piece lots—\$.30 each
10,000 piece lots—\$.29 each
15,000 piece lots—\$.28 each

You already know that:

- Monthly usage is 14,700 pieces.
- Standard cost is \$.32 each
- V_m is \$4,704 ($14,700 \times \0.32).
- F (for screw machine parts) is \$17.50.

First you check your EOQ chart (use the one in this article). Locate the point where the coordinates for $V_m = \$4,704$ and $F = \$17.50$ intersect. At this point, EOQ is three weeks so the economic lot is $3/4$ of a month's usage, or 11,025 pieces. The value of this lot is \$3,528 ($11,025 \times \0.32). Now the question is whether it pays to bring in lots of 15,000 pieces to get price that is \$.01 lower. To find out, you use the table of inventory carrying costs shown in this article.

Going down the "value of the lot" column on the table, you see that \$3,528 is between \$3,000 and \$4,000. You must interpolate. A \$3,000 lot costs \$101.08 for three weeks; a \$4,000 lot is \$100.93. Take half the difference between \$101.08 and \$100.93 and you find that the \$3,528 lot costs roughly \$101.00.

If a lot of 15,000 pieces were brought in to get the advantage of the lower price, this would be one month's supply worth \$4,800 (15,000 times the \$.32 standard cost).

To find the cost of carrying this inventory, you go to the one month in the table and interpolate between \$4,000 and \$5,000 for the value of the lot. For \$4,000 in the one-month column in the table you get \$101.12; for \$5,000, \$101.04. The difference is \$.08 and 80% of this (since \$800 is 80% of the difference between \$4,000 and \$5,000) is \$.064. So the cost of carrying the \$4,800 lot one month is \$101.06.

Thus, buying a month's supply instead of economic quantity of three weeks cost an extra \$.06 per hundred dollars. But the discount from buying the larger quantity is \$.01 per piece. Since \$100.00 buys 312 pieces at standard cost, the \$.01 reduction means a saving of $312 \times \$0.01$ or \$3.12 per hundred dollars worth of stock. Obviously, it pays to buy the larger quantity in this case. The net saving is equal to the additional discount less the cost of carrying the larger inventory, or $\$3.12 - \0.06 per hundred dollars worth of stock.

To help you fully understand how to use EOQ, more sample problems are at the end of this article. To work them, use the chart on page 82.

Familiarity with the vendor's plant is essential to buying the right quality. Here, John Ferguson, supplier representative, explains a new mold the foundry is using for a part bought by Assistant Purchasing Agent Frank Rocchi.



Buying the Right Quality— 3-Way Cooperation Pays Off

PURCHASING should do more than just look at inspection reports. It does at The Thomas & Betts Company in Elizabeth, N.J. There purchasing plays an active role in promoting better quality with its suppliers. Director of Purchases William Long is fully aware that the "best buy" is a poor one if quality is below par.

Mr. Long keeps in touch with quality and other problems by meeting frequently with other company department heads. He

is a member of five committees. Three of them—Quality Control, Production, and Production Tool—deal directly with material performance. It is at these meetings that Mr. Long finds out from foremen and others whether the company is actually getting its money's worth quality-wise.

But purchasing doesn't just sit and wait for quality complaints to come in "through channels." Besides a careful review of inspection reports, it uses shop shortage

sheets as checks on material performance. If a sheet shows output dropping on a given item, purchasing investigates. A buyer will talk to the foreman in charge to find out if the shortage was due to poor material. If it was, he goes to work with vendors to remedy the situation.

Good vendor relations really pay off when a defect in material occurs consistently. Non-ferrous castings are a good example. They are a very important item



Key to better quality is good vendor relations. Here, Director of Purchases Long (center) talks quality with Hugh Pope of Eastern Malleable Iron Co., right, and John Ferguson of the Ferguson Co.



Mr. Long keeps in touch with quality problems at meetings of the Quality Control Committee. At this meeting, he sees charts on improvement of conductivity of certain castings.



After they discussed mutual problems in his office, Director of Purchases Long took vendors John Ferguson and Hugh Pope out into the plant. There they can see the castings they supply being machined and more readily understand problems encountered.

Purchasing also keeps posted on quality problems by regular visits to the shop. Here, Adam Siegfried of purchasing talks to Alexander Ruskavich, machine operator, to see if he is having any problems machining a certain casting.



with Thomas & Betts. Mr. Long buys about 2800 tons of them per year. They're used for several hundred different types of electrical conductors made by the company. Good electrical qualities and easy machineability are musts. Another big problem in casting quality is conductivity.

Recently, purchasing and quality control worked with three casting sources to boost quality. The problem was conductivity. To improve it, the company developed new control specifications.

The three foundries agreed to cooperate on the problem and started checking their processes against daily reports from Thomas & Betts. Working together like this, the company and the foundries developed a better alloy for one casting which increased machineability.

When other castings did not meet the new specifications, purchasing contacted the foundries so they could look for the trouble. Sometimes vendors stopped production and sent T&B test bars

for inspection. Conductivity tests and spectroscopic analysis by quality control located the trouble. So three-way cooperation between purchasing, quality control, and the vendors paid off.

Director of Purchases Long considers good vendor relations and the company's interdepartmental surveillance of purchased materials dollar-savers as well as quality boosters. Both vendor and customer benefit from the lower cost resulting from this approach.

VENDOR RATING— Guide to Purchasing Decisions

Analytical buying goes far beyond costs. Suppliers' performance on delivery, quality, and service should be checked regularly—and objectively. A fair, statistically sound system helps both buyer and seller.

QUANTITY, capacity, delivery, price, and service. All these basic factors must be considered in picking the right vendor. How do you tell a good buyer from a mediocre one? By his ability to judge suppliers on these factors. A vendor who falls down on any one of them is a poor source.

Price usually isn't too tough to measure objectively. Analysis of quotations, discounts, packaging charges, and shipping costs is routine stuff for any seasoned buyer. But when it comes to rating delivery, quality, and service even the veteran buyer sometimes falls down. All too often, he must rely on his memory, hunches and other criteria which aren't too objective. It's pretty tough to put these factors down on paper for analytical comparison.

One Successful Approach

One company has succeeded in developing a technique for measuring vendor quality, delivery, and service in an objective, unprejudiced way. It is Sprague Electric of North Adams, Mass. Sprague's vendor rating plan gives the buyer statistically sound

data on the job each supplier is doing to serve as a guide for future buying decisions.

This system does not turn the buyer into a mere tabulator of inspection reports and other data. In fact, Sprague's Director of Purchases, Francis G. Jenkins, is the first to point out that the rating plan can never be a substitute for good purchasing judgment. Its basic purpose is to give the buyer information which he didn't have before. It can help him make the right decision in borderline cases. It also has done much to stimulate suppliers to improve themselves.

Rating Quality

The data for rating vendors are monthly tabulations of invoices received and the value of material rejected during a given month. The latter factor includes materials returned to the supplier,

passed on exception, and held for 100% inspection.

The value of the material rejected is divided by the value of the material shipped by a given supplier. This gives the percentage of rejection experienced from the supplier during any given month. Competing suppliers are then compared using these percentages. Also, average or expected percentages of rejection are computed for each basic type of material. Suppliers of the material can then be compared with the average.

Suppose, for example, that Sprague buys a certain material from four different suppliers. Over-all computations of value of rejections divided by value of shipments show that rejections should be 4%. If suppliers don't exceed 2% during a given month, obviously they are doing a good job on quality.

Vendor Rating, Month of : June, 1955

Vendor	\$ Volume This Month	3 Months Average	\$ Volume of Rejections		% Re- jected	Delivery- Excellent, Good, Fair, Unsatisfactory	% of Bus.	Purchaser's Comments-
			This Month	3 Months Average				
Graham, Inc.	2,755	2,660	1,760	587	22%	Excellent	13%	Very adaptable- Take small runs
Proton Co.	4,191	2,900	-----	485	17%	Good-Exc.	20%	Many "standard" items which tie in with ours
San Vicente & Son	10,016	7,133	-----	-----	0	Excellent	46%	Not too helpful on special jobs.
Edgerton Plastics	2,429	2,964	-----	344	12%	Excellent	11%	Good on small jobs.
Swiches, Inc.	2,112	2,491	636	212	9%	Unsatisfactory Fair	10%	Decrease % of Business
Edgington & Bro.	9,543	8,510	-----	-----	0	Good	59%	Working at capacity
Pines & Son	6,700	5,987	122	57	10%	Good	41%	Good competition
Parthoon Bldg Co.	2,180	5,440	843	935	17%	Good	31%	Give more business
Thomas New, Inc.	2,008	2,288	-----	899	38%	Good	29%	Decrease of business
Smith, Hardware & Co.	1,836	1,771	-----	316	18%	Excellent	26%	Reject rate still too high
Wardens & Germainet	951	1,082	165	191	18%	Good-Excellent	14%	Give more business- seems to be working out O.K. Watch rejects closely.
Dellington Machines	32,666	23,121	603	486	2%	Fair-Good	36%	Much improved- New Equipment should improve delivery.
Thomas A. Neppin	25,772	16,041	-----	457	3%	Good-Excellent	28%	Production wants more of this material.
Francis I. Amier Co.	14,656	7,419	-----	-----	0	Excellent	16%	Increase % of Business if ok with production
	18,010	15,871	-----	-----	0	Unsatisfactory	20%	Expect improvement in delivery.

* Includes Passed on Exception, and reworked by Sprague

Basic data on volume shipped and volume rejected is analyzed on this vendor rating worksheet.

But if a supplier gets rejections of 7%, something is wrong. Obviously, that supplier has not been doing as good a job for Sprague as his competitors.

A detailed analysis helps find what is wrong with that supplier.

Delivery and Service Rating

Sprague has found that the expediting section is the best group to rate a supplier on meeting schedules. This group rates vendors on delivery relative to each other. There are four ratings:

1. Excellent: Meets promised delivery dates without expediting. Delivery promise is usually in accord with requested date.
2. Good: Usually meets shipping dates without excessive expediting.
3. Fair: Shipments late, considerable expediting is needed.
4. Unsatisfactory: Often late in shipping, series of broken deliv-

ery promises, constant expediting.

After the worksheet used for noting both delivery and quality ratings is completed, it goes to the buyer for comment. He considers such factors as attitude and the capacity at which the vendor's facilities are operating. But most important is the service the vendor can give. Service doesn't mean just emergency rush shipments. Technical help and ability and willingness to assist with prototypes and special jobs also count.

Using the Ratings

When a worksheet is completed it is ready for use as a tool for rating the job the vendor is doing for Sprague. How a supplier stands with Sprague isn't a deep dark secret guarded carefully within the recesses of the purchasing department. On the contrary, Sprague purchasing be-

lieves in discussing a vendor's rating with him in an open and frank fashion. This is probably the real reason why vendor rating has been so successful.

Each month Mr. Jenkins sends the chief executive of the supplier a letter. It tells him how well he is doing on quality compared with competition. The letter goes to the head man rather than the local salesman for two reasons. First, the local man should know the situation already if he is on his toes. Second, local representatives' reports are never as effective as those direct from the customer.

Results of Rating

Like almost everything else that is worthwhile, vendor rating costs money (although it probably costs less than what might be indicated by a casual, first estimate). Nevertheless,

Sprague's program has returned its costs many times over according to Director of Purchases Jenkins.

Mr. Jenkins points out that Sprague is no different from most other manufacturers in that its purchased costs take roughly as big a bite out of the sales dollar as shop costs. In manufacturing, staff controls evolved a number of years ago. They include such functions as time study, quality control, methods improvement, process engineering, factory cost accounting, etc. In purchasing such control and analysis has, in the past, been pretty much limited to the buyer.

However, the more progressive companies such as Sprague have found that purchasing staff activities like purchasing research and vendor evaluation can pay off as much as similar functions in manufacturing. Mr. Jenkins reports that the company has benefited from vendor rating in four ways:

1. The vendor rating reports keep buyers aware of how important it is to keep suppliers on their toes on quality and delivery. In many companies (not Sprague) buyers occasionally get sloppy and don't give poor quality the attention it deserves.

2. Suppliers know how they

stand compared with competitors on quality and delivery. They also know that Sprague is fully informed of their performance be it good or bad. If the president of a supplier receives a letter stating that he ranks fourth of four suppliers, he is going to find out why. The result is increased supplier interest in high standards and a definite improvement by firms that ranked near the bottom of the totem pole at the start of the program.

3. The system quickly brings quality problems out in the open. It tends to force remedial action on problems which might otherwise drift on for months with no real solution. No supplier likes a rating well below his competitors and naturally will want to take steps to improve it.

4. Direct and indirect cost savings have been substantial. Better quality and delivery has a favorable effect both on Sprague's

Suppliers are told fully and frankly how they stand. Regular reports to vendors (left) may be followed by personal discussions. Explaining to a vendor how the system works (below) are Purchasing Agent Fred McNamara, seated behind the table, and Expediting Supervisor Joseph T. O'Keefe, standing.

SPRAGUE
SPRAGUE ELECTRIC COMPANY
NORTH ADAMS, MASSACHUSETTS

Date: August 4, 1955

To: The X. Y. Z. Company
Meadowbrook Lane
Midway, Massachusetts

Att: Mr. John J. Doe, President

Vendor Rating, Month of July
Delivery Excellent

* % Rejected 0
Relative standing among rated suppliers in your category: 1st among 5

* Rejection includes material which we pass on exception. The percentage is based on a three month moving average of dollar value of rejections divided by the average amount paid you over the same period.

Your comments are invited.

Very truly yours,
SPRAGUE ELECTRIC COMPANY

F. G. Jenkins
Director of Purchases
/s/



overhead costs and its suppliers. A cut in rejections saves Sprague time and money in receiving inspection (and sometimes from resultant objects of the final product). The saving to the suppliers from fewer returned shipments is obvious. In addition, both the company and the supplier benefit from changes in specification that often come from careful analysis of quality problems. Improved delivery means less expediting for Sprague and fewer scheduling difficulties for its plant.

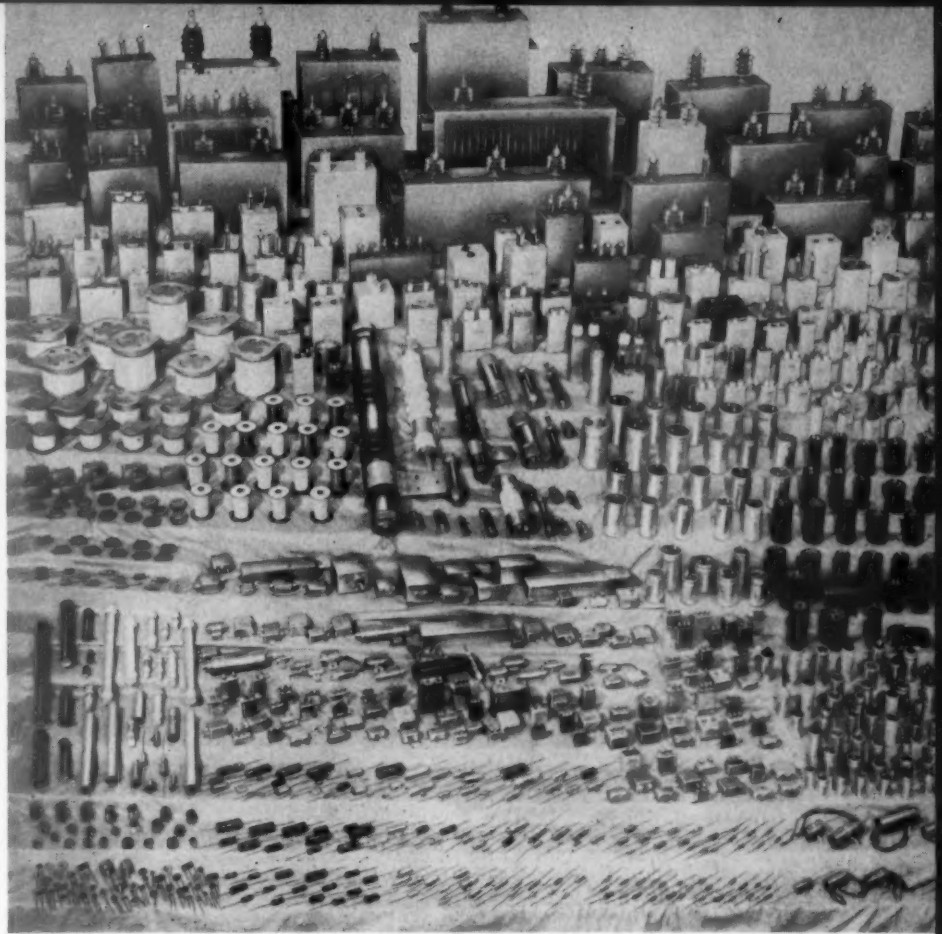
Starting a Program

At Sprague, the statistical tabulations necessary to get quality ratings are done by purchasing research. Mr. Jenkins recommends that any department planning such a program have the tabulation done by some staff group like purchasing research. This keeps buyers from getting involved in a lot of detail work. It also solves the problem of who should handle vendor rating if more than one buyer does business with a given company.

How much time does the vendor evaluation program consume? Sprague processes about 200 purchase orders daily. About 50% of them are production parts and materials. It computes vendor ratings for only about 35 selected suppliers of production parts and materials. Total annual purchases are about \$16 million. Mr. Jenkins estimates that only about 8 hours of clerical work are needed monthly to handle the computations and reports necessary for vendor rating.

The above figures can be correlated and an estimate made of the cost of vendor rating in any size department. To figure the cost in dollars, simply multiply the number of clerical hours by the prevailing rate per hour.

A not unexpected result of vendor rating is that old-line suppliers that have met the test of time came out on top. It has always been a basic Sprague policy to establish suppliers who can be counted on to quote fair prices, whose deliveries are reliable, and whose service is always available. This policy continues. Vendor rating has helped justify it.



Top quality is essential in Sprague's line of high-precision electronic components.

Vendor rating is a flexible tool. The principles of the Sprague system can be adapted to suit the needs of almost any company. Suppose, for example, that your company uses statistical quality control combined with vendor certification.

With a system of vendor certification, if quality is consistently high, cost of receiving inspection can be cut. Also, the over-all quality level can be raised. Vendor's shipments are "certified" to be of a specified quality level at time of shipment. Only spot checks by receiving inspection are needed.

Combine With Certification

A vendor rating plan can help decide which vendors are worthy of certification. Besides doing a good job according to vendor rating, a supplier must have other attributes before he can be certified. He should be using the latest in scientific quality control techniques. He must be fully informed as to the relative importance of various tolerances so he

can set up sound controls. He should also be fully familiar with the customer's inspection methods to eliminate any possible misunderstandings.

Decide on Sample

To get vendor certification going, it is necessary that buyer and seller agree what percentage of a random sample is acceptable. For example, it might be agreed on a given dimension that if a check of a 100-piece sample shows but one part off tolerance, the lot is acceptable. The size of the sample and permissible deviations are based on statistical techniques. Mutual agreement between buyer and seller is, naturally, vital to the success of the plan.

Vendor rating does more than show which vendors should be considered for a certification plan. It provides a running check on performance under the plan. Combining vendor rating with certification is just one possible variation of the Sprague system. There are, no doubt, many others equally useful.

Caution! Check Your Vendors

CREDIT REPORTS

for Creative Buying

With Fewer Risks

One of the newer tools of scientific purchasing is financial analysis of suppliers. It's simple to apply once the principles are learned. Through it, you get a thorough, accurate picture of the people you deal with, and a chance to enlarge the scope of your buying.

This article was specially prepared for PURCHASING by
Kenneth Henry and Joseph A. Wall of Dun & Bradstreet, Inc.



Telephone order clerks in Dun & Bradstreet's New York office. Requests for credit reports received here from subscribers are usually answered in minutes.

CHANCES are you have a very useful buying tool available to you in your controller's office. It's the Dun & Bradstreet credit service. If your company has a large number of accounts receivable spread over the country, it's all but a must if credit losses are to be avoided. If you are already paying for a service, it's just good common sense to make maximum use of it.

Of what possible use can credit reports on present or proposed suppliers be to you? After all, the vendors you buy from are giving you credit, not vice-versa. The value of such data to buyers is attested to by the fact that, in at least one company, purchasing makes *greater* use of Dun & Bradstreet reports than accounting!

Here's how credit reports can help you do a better job. They can do these things:

BRISTOL CANDY CORP
PAGE 2 (A)BRISTOL 3 PA
AUGUST 18 1954

COMPARATIVE FINANCIAL STATEMENTS

	Jun 30 1952	Jun 30 1953	Jun 30 1954
Cash	\$ 78,171	\$ 72,913	\$ 87,486
U.S. Govt. Bonds	36,710	70,126	---
Accounts Receivable	38,040	29,584	68,640
Inventory	58,053	71,874	138,442
TOTAL CURRENT ASSETS	210,975	244,499	294,570
Fixed Assets	31,232	28,549	253,755
Cash Value Life Insurance	4,154	5,047	6,416
Prepaid Expense	2,036	1,947	6,496
TOTAL ASSETS	248,398	280,043	561,237
Due Banks	---	---	25,000
Accounts Payable	20,179	9,802	10,654
Federal Income Taxes	30,305	38,712	79,131
Accruals	18,049	12,816	8,635
TOTAL CURRENT LIABILITIES	68,624	61,331	123,420
Due Bank-Deferred	---	---	125,000
Common Stock	150,000	150,000	150,000
Earned Surplus	29,774	68,712	162,817
TOTAL LIABILITIES	248,398	280,043	561,237
NET WORKING CAPITAL	142,350	183,168	171,150
CURRENT RATIO	3.07	3.98	2.38
TANGIBLE NET WORTH	179,774	218,712	312,817
Net Sales	735,198	771,035	1,106,165
Net Profit	54,774	68,938	124,105
Dividends	15,000	30,000	30,000

CENTS OMITTED. The foregoing figures were prepared from annual financial reports of the auditors, James Wharton & Co., C.P.A.'s, Philadelphia, Pa. Statements were received by mail accompanied by transmittal letter. At June 30, 1954: Accounts Receivable \$3,106. Fixed Assets were net of reserves consisting of finished goods \$44,106. In pr valued at the lower of cost or market under inventory - maximum coverage \$200,000 under a Equipment - \$75,000; Buildings - \$200,000.

PLEASE NOTE WHETHER NAME, BUSINESS AND STREET
The foregoing report is furnished, at your request, under your Subscription Contract, in strict confidence, for your exclusive use as an aid in determining the creditworthiness of the company.

1. Give you general information on the vendor's facilities. If the report is unfavorable, this can save you the time and expense of a personal visit.

2. Provide insight into the business experience and character of the people with whom you deal. Chances are if a vendor has a record of unethical dealings, he won't be a good one.

3. Show how good the vendor's credit is. If it's really bad, you might be forced to look for a new source at the wrong time. The vendor's creditors will have put him out of business.

4. Describe the vendor's major products. If the vendor is already making something similar to what you propose buying, it's less likely that you will have quality or delivery problems. A man does best what he knows best.

5. Provide data on financial

In this more complex credit report (left), financial statements are set up so they can be compared from year to year. Important ratios are also figured.

There are four sections to credit reports—history, operation-location, financial information, and payments. In this fictional report (below) on a small manufacturer, it is possible to get all information on one page. Larger companies often require reports several pages in length.

3661
KENT ELECTRONICSCD 1 OCTOBER 3 1955
MFG. ELEC. ASSEMBLIESBROOKLYN 19 N.Y.
1246 KENT ROAD

Miles Gross, Partner

Hannah (Mrs. Miles) Gross, Partner

RATING: F 2 1/2 to E 2

STARTED: 1948
NET WORTH: \$24,901PAYMENTS: Discount
SALES: \$189,232SUMMARY
SALES ARE INCREASING AND OPERATIONS ARE PROFITABLE. THE CONDITION IS SOUND. HISTORY

Style was registered by the partners on April 30, 1948. This firm was formed April, 1948. Starting capital consisted of \$10,500 savings, a \$3,500 loan from Teachers Credit Union, and a \$3,000 loan from partners' families, making a total of \$17,000. Loans have since been repaid. Miles Gross, 41, native born, and a mechanical engineer. Graduated from Columbia College of Engineering in 1935. Employed as designer by Liggett Electric Co. and by Ray Products Co. until this business was started. Hannah (Mrs. Miles) Gross is 36. She was a New York school teacher prior to formation of this firm.

OPERATION-LOCATION
Manufactures parts and component assemblies for radio and television receivers (U.S.S.I.C. #3661), against confirmed orders (95%) and own account (5%). Sales to set manufacturers (95%) and mail order to repair shops (5%). Terms 2/10, net 60 days. Both partners active, three employed. Equipment includes 6 Cleveland Automatic bench lathes, 4 Salisbury 1" drill presses, 2 Norden stamping machines (19" capacity), and assorted specially-designed jigs, dies, and hand tools. Rents first floor of a two-story building in good condition. Plant measures about 120 x 50 feet. Located in long-established light industry zone.

A financial statement at June 30, 1955—cents omitted:—		FINANCIAL INFORMATION	
ASSETS		LIABILITIES	
Cash	\$ 6,304	Accts Pay	\$ 13,724
Rec	17,872		
Merchandise	4,450		
Total Current	28,626	Total Current	13,724
Fixt & Equip	9,913		
Deposits	86	NET WORTH	24,901
Total Assets	38,625	Total	38,625

NET SALES from July 1, 1954 to June 30, 1955 \$189,232; gross profit \$39,181; salaries and drawings of partners \$6,732; net profit over and above salaries and drawings of partners \$3,467. Monthly rent \$150. Lease expires 1958. Signed September 20, 1955 KENT ELECTRONICS by Miles Gross, Partner

Received by mail.

Accountant: J. C. Harris, C.P.A.
Gross has established a good reputation for quality and adherence to delivery schedules, with the result that both sales and profits of this business have mounted steadily. Part of earnings have been reinvested in the business to finance its steady growth.

PAYMENTS		AUG 20 1955	
HC	ONE	TERMS	
4431	3927	10th of MO	Disc
2340	2230	2-10 M30	Disc
2250	2049	2-10	Disc
1136	1136	2-10 Prox	Disc
575	480	2-10 EOM	Disc
115		30	Ppt
10-3-55	(241 29) Five		

Sold 3 yrs to date
Sold 1949 to 3-54
Sold 4 yrs
Sold yrs to date
Sold 1-49 to 12-53

PLEASE NOTE WHETHER NAME, BUSINESS AND STREET ADDRESS CORRESPOND WITH YOUR INQUIRY.
The foregoing report is furnished, at your request, under your Subscription Contract, in strict confidence, by DUN & BRADSTREET, Inc. as your agents and employees, for your exclusive use as an aid in determining the creditworthiness of the company, and for no other purpose. 1952-4 (cents)

strength and profits. All other factors being equal, the bigger the vendor's profit margin, the better it is for you. A vendor with a healthy profit is an efficient one. Also, he is more able to give you lower prices if he has to.

The five ways in which credit reports make for better buying that are listed above aren't just theoretical principles. They're backed by the experience of buyers that have applied them. For example, a buyer of binder twine for a midwestern company received an offer from a source that he knew almost nothing about. A check of samples showed that the offer was for just what he wanted. And the price was right. There was only one hooker. The order had to be paid for in advance. The buyer suspected a new version of the old shell game. He had almost decided to drop the deal when a credit agency suggested a special check-up on the supplier. This showed that the offer was honest and the terms bona fide. So the buyer went ahead with the deal. His company made a profit it would have lost were it not made for the credit check.

Lower prices resulted from the use of a credit report by a West Coast manufacturer of aircraft parts. It had a contract to make a major sub-assembly for another well-known company. Apparently, an enterprising salesman had talked one of the prime contractor's engineers into specifying his brand for a minor component. In any event, the blueprint did not permit wide discretion on the buyer's part. The buyer was all set to place the part with the recommended source. The price looked high but time was short.

3¢ Not 9¢

Since he'd had no previous dealings with the source, he got a credit report on it just to make sure everything was O. K. Everything was as far as credit and finances were concerned. One thing in the report caught the buyer's eye though. The vendor was strictly a supply house. It did no manufacturing — even though its salesman had implied that the company was going to make the item in its own plant.

By checking further, the buyer located the company that was actually going to make the part. He wound up buying the item direct and paying a price of 3¢. The source specified on the blueprint had wanted 9¢ for the identical item.

A Less Legal Case

The situation in the above case was unethical but not illegal. It could have been worse. *It was* for a buyer in another company. He was offered a good deal on a new type package that was just what he was looking for. The source was a new one and its "president" wanted a \$10,000 advance to cover tooling costs. The buyer got a quick credit check. It showed that the man who had made the offer and claimed to be head of the packaging concern had a very bad record. He had been involved in the sale of questionable securities and apparently was wanted by the police for passing bad checks. So the buyer dropped that deal fast.

Use Reports Effectively

A good rule for using credit reports is to get them early enough to permit you to take action. Some of them you may already have on file in your accounting department. Others you'll have to order. It's also a good idea to check more than new vendors. While a check on proposed sources may give more spectacular results (in a few cases, perhaps as interesting as those cited in the above examples), it pays to keep track of old line sources too. In a competitive market, positions change in time. You might have held off on placing too much business with a small vendor. In time that vendor can get bigger. If you don't know about it, you might "miss the boat" in not giving him more business in line with his growth.

To use credit reports for better buying you've obviously got to know what they contain. Then you've got to know how to use the information.

The Dun & Bradstreet credit report has four basic sections. They are:

1. A History of the business, who owns and who runs it.

2. A Method of Operation section.

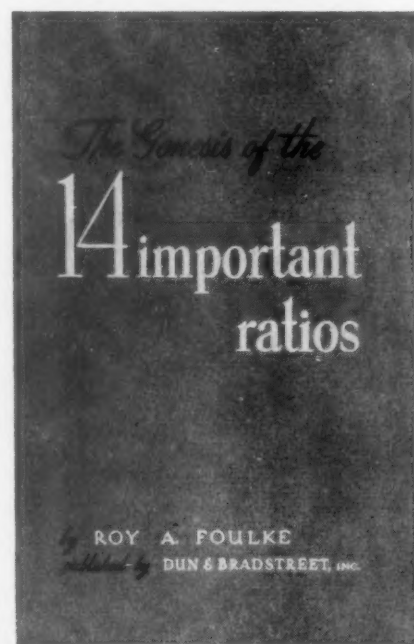
3. Financial Information.

4. A Payments section.

History — This section deals with such things as when the business was started, by whom, starting capital, authorized and paid-in capital, when the present management took charge, and other facts. It also describes the previous business experience of the owner, partners, officers or directors.

This section is very useful if you're making any long range plans with a vendor. In such cases, stability of management and a record of responsibility become very important. It's also helpful to know about the outside interests of a vendor. Sometimes this can forestall collusion in competitive bidding.

Method of Operation—This section is very important to purchasing. It lists the concern's physical set-up—size and location of plants and warehouses, transportation facilities such as rail sidings and docks, list of machinery and equipment (in cases where a lot of contract work is done), num-



Each year Dun & Bradstreet publishes fourteen important ratios for 72 different lines of business. This information is extremely useful for intelligent financial analysis. It can be obtained without charge by writing Dun & Bradstreet, 99 Church Street, New York 8, N. Y.

PURCHASING

ber of employees, usual selling terms, and other helpful information.

Financial Information — This section includes a recent financial statement, sales volume, and a summary of recent trends. You can learn whether or not a supplier has enough capital to handle your needs. This is just as important as knowing whether or not he has the machines to do the job. If the supplier can't afford to keep adequate stocks on hand, his deliveries might well be slow. *If this is a problem with a supplier, it's unlikely that he'll brag about it.*

Payments—This section is a record of how the vendor pays his bills. It gives further clues on his ability to deliver on orders. If he pays fast and takes discounts, he can likely get the materials he needs when he needs them. If he's slow in paying, he might well have trouble.

Getting Into Details

When you're considering making a vendor a key link in your operations, a very careful analysis is useful. To help evaluate the financial picture, there are a number of important ratios. They're easy to figure. Some are already in the credit report.

Naturally, ratios are useless if their underlying significance isn't understood. Fortunately, it isn't too hard to get at least reasonably familiar with them. This doesn't mean that a buyer should also be a financial expert. But he should at least be able to discuss the subject intelligently with others in his company.

Some Important Ratios

Roy A. Foulke, vice president of Dun & Bradstreet, has made a special study of 14 important ratios. The most common ratio is that of **current assets to current liabilities**. Mr. Foulke writes in *Behind the Scenes in Business* that "even today the businessmen are legion who believe in this one ratio as the infallible guide to the interpretation of balance sheets. . . ." But, he points out, "no one ratio can possibly give a clear picture. . . ."

Besides the current ratio, Mr. Foulke considers 13 other ratios

Common Accounting Terms — And What They Mean

CURRENT ASSETS, in general, include cash and things that can be turned into cash in short period of time. They're the total of cash, accounts and notes receivable, inventories, and marketable securities, less reserves.

CURRENT DEBT is the total of all liabilities due within one year. It includes currently due payments on notes, mortgages, and funded debt, reserves for taxes, and accounts payable.

NET WORKING CAPITAL is the excess of current assets over current debt.

FUNDED DEBT includes payments on mortgages, notes, etc. with a maturity of more than one year.

FIXED ASSETS are the total cost values of land and depreciated book values of buildings, machinery, equipment, etc.

TANGIBLE NET WORTH is the sum of all outstanding preferred and common stocks, surplus and undivided profits, less intangible assets such as good will, trade marks and patents, treasury stock, etc.

NET PROFIT is the profit after all depreciation charges, reserves for Federal income taxes, adjustments of inventory valuation to lower of cost or market, write offs of bad debt, and other adjustments.

to be important in getting an understanding of a business' operations. These 13 ratios are divided into considerations of capital, inventory, sales, and net profit.

First capital ratio is **fixed assets to tangible net worth**. When its net worth (all tangible assets less all liabilities) is between \$50,000 and \$250,000, a business should be carefully analyzed if the depreciated book value of its fixed assets is greater than two-thirds of net worth. When net worth is over \$250,000, great care isn't needed unless fixed assets total more than 75% of net worth. Lower ratios are naturally more favorable.

Second capital ratio is **current debt to tangible net worth**. If net worth is between \$50,000 and \$250,000, this ratio shouldn't normally be greater than 67%. When net worth is over \$250,000, current debt shouldn't exceed 75% of net worth under normal conditions.

Third capital ratio is **funded debt to net working capital**. Rarely, if ever, should funded debt exceed net working capital.

Fourth capital ratio is **total debt to tangible net worth**. This combines current and funded debts and thereby extends the capital ratio analysis.

First is **net sales to inventory**. This is figured by dividing annual sales by inventory. It shows how fast stocks are being turned over. Best way to use it is to compare with other companies in the same line.

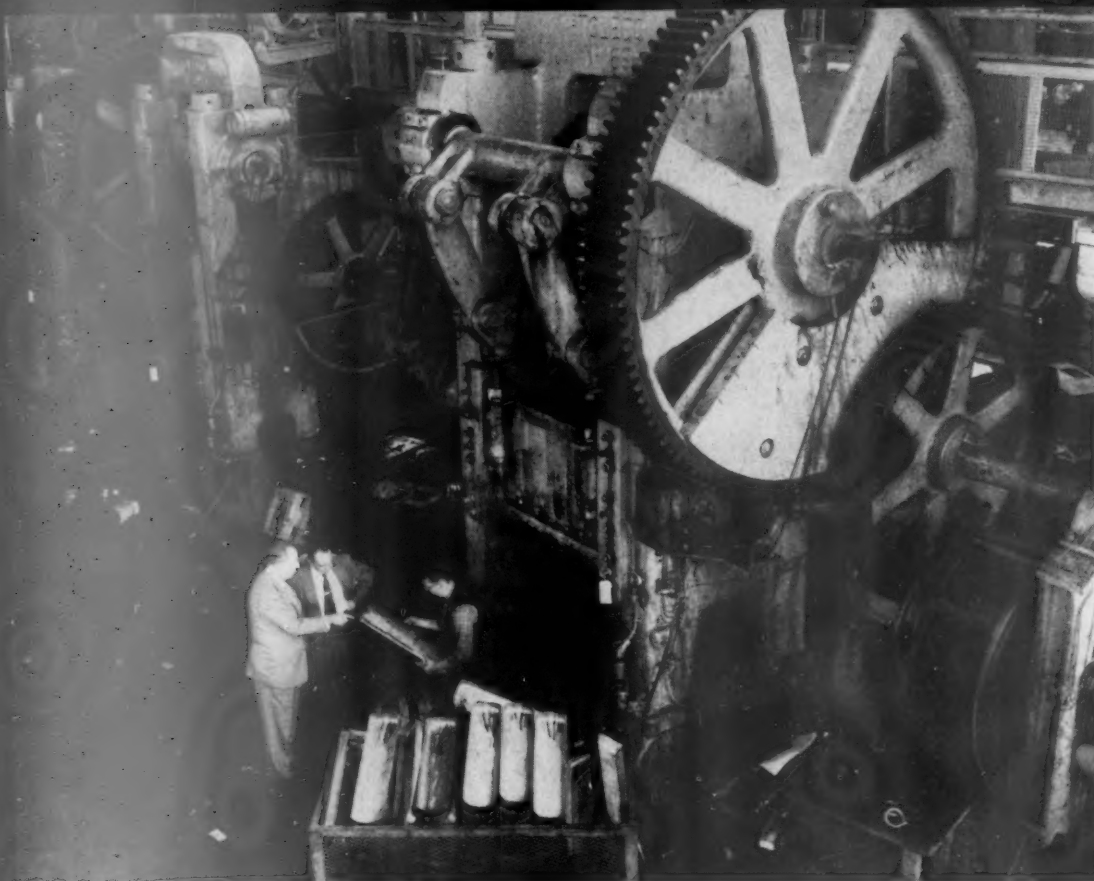
Second is the ratio of **inventory to net working capital**. According to Mr. Foulke, "this is the one ratio which will give an indication of as to whether an inventory is heavy or not, irrespective of the volume of business. . . ." If net worth is between \$50,000 and \$250,000, be careful if inventory exceeds 75% of net working capital. When net worth is over \$250,000, inventory should be no greater than net working capital.

Three Sales Ratios

Third ratio is **current debt to inventory**. To figure it, divide current liabilities by inventory. This ratio often shows up a top heavy debt which can be corrected only with more capital or less sales. It will vary with business conditions and periods and types of business. Compare competitors for best results.

First sales ratio is the **average collection period**. To find, first divide annual sales by 365 to get average daily sales. Then,

(Please turn to page 294)



PLANT VISITS—

A Look at How

The modern buyer is no longer a deskbound order placer. He's making regular trips to his vendors' plants. He wants to know the men who handle his orders; what the company is capable of; what is slowing it down or pushing it ahead in its field. He's using personal contact to get the answers he needs.

SOME buyers have never been inside a vendor's plant. On the other hand, some companies have a policy that their purchasing people must make regular visits to the facilities of the firms they do business with.

There is no question that the buyer who has first hand knowledge of a vendor's operation is equipped to do a better job than the one who never stirs from behind his nameplate. But there are also degrees of efficiency in plant visiting. Your visit can begin and end in the sales managers' office—topped off perhaps with an excellent lunch at a nearby café. Or it can be a complete, thoroughly analytical one, covering every activity that relates to you.



DOES THE VENDOR ENCOURAGE PLANT VISITS? Purchasing Agent Frank Tilley, Anemostat Corporation of America, begins a regular visit to Worcester Pressed Steel Company, Worcester, Mass. These trips were begun several years ago when Mr. Tilley first started buying from Worcester Pressed Steel. The company has a definite policy of encouraging plant visits and offers every cooperation to purchasing men who call.

IS EXPERT TECHNICAL ADVICE AVAILABLE? On this trip Mr. Tilley sought to have a stamping he buys modified, without a complete change in tooling. Worcester's Manufacturing Engineer Carl G. Hakanson and Chief Estimator Birger G. Spongberg (right) discuss this with him. Other manufacturing and engineering personnel are also available for such meetings, and were present at later stages of this discussion.



Suppliers Are Doing

Making sure you do a proper inspection job depends, of course, on the supplier's cooperation. He must be aware of and sympathetic to your basic aim in visiting him: to try and judge his ability to serve your company as a good source of supply. A good vendor will not try to hide anything from you except the corporate secrets that sometimes exist in highly competitive fields.

When buyer and seller understand, and cooperate with, each other a plant visit can be an exercise in "service value analysis". Properly carried out, the visit will be a study of processes, equipment, policies, and personnel, to see how they affect your purchases, and how they may be improved. Plant visits broaden

and enrich the important personal contacts in buyer-seller relationships that often produce cost-saving ideas. They foster the mutual confidence that nourishes good buying. The buyer assures himself of the seller's capabilities (or lack of them, if that is the case.) The vendor is put on notice that the purchasing agent doesn't quit thinking about his orders once the paperwork is completed.

One of the biggest advantages of plant visits is their educational value. Both the neophyte buyer and the experienced purchasing agent can do a better job when they know how a part or product they buy is made. They can understand it better, analyze it more intelligently the next time they

see it on a requisition. And they can put the vendor on the spot if he juggles delivery promises—because they know approximately where their orders should be on the production line at a given time.

Whether you're visiting a vendor prior to issuing an order, or with a specific problem in mind, or just as a matter of policy, both of you benefit. With each visit, you strengthen a bond of understanding and cooperation that helps solve problems that often only grow worse through formal correspondence.

Frank Tilley, purchasing agent of Anemostat Corporation of America, whose visit to the Worcester Pressed Steel Com-



DO THEY HAVE THE PROPER EQUIPMENT TO DO MY JOB? General Foreman Robert H. Jernberg accompanies Mr. Tilley to the battery of machines turning out his job. The practice of inspecting the production line this closely varies in industry, depending on the product bought and the size of manufacturing facilities. It is normal procedure during Mr. Tilley's visits to Worcester Pressed Steel.



IS ENOUGH ATTENTION GIVEN TO QUALITY CONTROL AND INSPECTION? Chief Inspector Edward E. Hill reviews possibility of adjusted tolerances resulting from proposed changes in specifications. In carefully designed products like Anemostat air diffusers, it is essential that vendors be properly staffed and equipped for painstaking inspection and quality control.



ARE PLANNING AND SCHEDULING COORDINATED WITH MY NEEDS? A short visit with Manager of Production and Material Control Charles T. Mooney provides vital information on the production status of Anemostat orders. Incorrect timing of delivery could adversely affect the buyer's own scheduling.

pany was specially photographed for this story, began visiting the plant years ago, as soon he became a customer. He follows a similar policy with all his major suppliers. The photographs serve to illustrate points he wants to know about a supplier.

"Plant visits" says Mr. Tilley, "definitely help us do a more scientific purchasing job. They cut down involved telephone calls and correspondence. They assure us we are not supporting some kind of a sweatshop operation. They enable us to point out to our vendors possibilities for cost saving. They help to coordinate our efforts and those of our vendors for the production of the best product at the best price."

ARE STOCKS ADEQUATE AND EFFICIENTLY HANDLED? Mr. Tilley, along with Works Manager Leonard C. Schmidt, examines some of the stock that has just been sheared prior to going into the manufacture of Anemostat parts. A good P.A. can quickly judge whether suppliers' inventories are adequate, too low, or overloaded. This provides a good insight into the competence of their purchasing, and the general efficiency of their operation.

DOES TOP MANAGEMENT TAKE AN INTEREST IN MY PROBLEMS AND VIEWPOINT? The visiting purchasing agent's opportunity to meet and talk with key executives is an important measure of a company. The door of Worcester Pressed Steel's President Carter C. Higgins (right) is always open—not just for window dressing but for practical discussions with buyers. Sales Manager John E. King (center) has been with Mr. Tilley throughout his visit.



... at the Right Price

TARGET COSTS— Team Effort



for Value Analysis

You can't expect buyers of complex parts to know every economic and functional detail of thousands of components. Hamilton Standard's cost reduction project teams PA's with men schooled in shop practice. Result: a high percentage of bulls' eyes in shooting at lower costs.

A BUYER of complex products would be a genius if he knew every cost and functional detail of the parts' thousands of components. This is what has discouraged many purchasing agents from starting—or trying to start—value analysis programs in their departments.

Hamilton Standard, a division of United Aircraft Corporation, has a system that has beaten the problem in a very profitable way. Called "Project Target Costs" the program is already hitting 90% of the cost reduction marks set up for it.

With a target cost as a guide, the buyer is free from a mass of detail. He is ready to devote full purchasing skill to the job of cutting costs. The targets are set by a committee of men thoroughly schooled in shop practice and fully acquainted with the parts that make up the end product. On it are representatives from cost accounting, production, engineering, production engineering, purchasing, and sales.

H-S gets the project under way with a careful analysis of the parts list, or bill of materials, of the completed assembly. Minor parts currently bought at low cost—such as standard bolts, nuts and screws—are eliminated.

Attention is then given to new material for items on which there is little or no cost experi-

ence. This includes castings, forgings, special designs, etc., and requires a great deal of thought. Before any estimate, the analysts must know the ordering quantity and rate of production. Will the overall requirement be 1000, 5000 or more units? What is to be the rate: 100, 250, 500 or more per month, or for another period? The ordering quantity and amount of money allotted affects the degree of completeness and proficiency of tools, gages, dies, etc. Thus, the production efficiency to be expected from a vendor depends upon the quantity and permissible tooling.

Prospective casting costs are determined by study of the blueprint and comparison of costs of castings of similar type and material. Contours and cores are specially considered as to how they affect cost. Here it is important that the analyst be familiar with foundry practice, the relative values of sand, die and precision castings, and the market prices of various metals.

In choosing a target cost for a forging, procedure is about the same. The analyst has to know the costs of die making and die maintenance, as well as forge shop practice. This is the only way he can be of help to the buyer.

The remaining parts in the list are divided on the basis of vendors' specialized services. Screw machine products, sheet metal work, stampings, general machine shop work, molded plastics, and rubber goods are bought from separate sources. Targets are made with regard to the suppliers' equipment and ability to supply a particular type product.

Once the items to be targeted are chosen and

grouped, a blueprint is obtained for each part. A card is filled out for each part, containing all available details, except the target. If the item has been made or bought before, the last actual cost is inserted. With this information at hand, a study of the print will show whether the item is being bought economically or a lower target is advisable.

When the item is new there is no entry in the column marked "actual." And if the part is relatively simple the target can be readily estimated and entered on the card.

Complex parts demand a lot of background study. Analysts are expected to learn the values of the nearest comparable piece for which there is some cost experience. When such an item is found, the part number, part name and actual cost are noted on the card.

Having studied blueprints and comparative costs, the estimator decides what the item should be bought for. That target cost is entered on the card.

When target cards are completed, they are placed in groups according to classifications that would be most helpful to buyers. Each group is arranged in numerical sequence and the information is tabulated on a Project Cost Breakdown Sheet. This collection of data is the basic information which the purchasing department uses in its part in the cost reduction program.

Herewith are the basic steps in starting and completing a project. The hypothetical figures appear in an instructional manual issued to buyers by Hamilton-Standard.



PRICE COMMITTEE - TARGET ITEM	
Part Number	106123
Part Name	Spacer
Assembly Number	5016980
Actual	PP M
Target	\$3.50 \$3.00

The Cost Analysis Committee prepares a card for every part to be targeted. Part number, name, and number of the assembly are written in. If part has been purchased, actual and target costs are entered under PP, or if made, under M. Where there is no previous cost experience, no actual cost is entered. On complex parts, figures for comparable items are written in the blank space to the right, and notations made of the part number and name.

A Project Cost Breakdown Sheet is made up from the cards, and forwarded by the Cost Analysis Committee to the Purchasing Department. Target items are broken down only into general categories at this point.

HAMILTON STANDARD DIVISION
PRICE COMMITTEE: May 25, 1955
EXCITOR ASSEMBLY
TARGET COSTS: Ordering Quantity is 500 at \$0 per month

Part No.	Part Name	Required per Assembly	ACTUAL UNIT COSTS		TARGET UNIT COSTS	
			PP	M	PP	M
106123	Spacer	1	\$1.50		\$3.00	
106127	Shim	1	.60		.50	
106128- all	Wear Seal	1	2.50		2.00	
106130	Rotor Hub	1	2.50		2.00	
106742	Ring Bearing	1	18.00		15.00	
106743	Gasket	1	1.50		1.25	
106959	Spiral Pin	2	.60		.25	
CASTINGS						
C-104104	Housing	1	\$19.00		\$16.00	
C-104234	Main Body	1	18.00		16.00	
C-104242	Supply Housing	1	7.00		6.00	
C-104244	Main Bearing Support	1	10.00		8.00	
C-105006	Housing Cover	1	6.00		5.00	

SHOP ITEMS (S) ASSEMBLIES		MACHINED ITEMS (S)	
	L-minutes		L-minutes
104233	Excitor - including test	104104	Housing
104234	Main Body	104193	Bearing Cage
104235	Frame	104236	Pin
104237	Rotor	104238	Rotor
104243	Main Bearing Support	104242-1	Supply Housing
104252	Housing & Bearing	104244-1	Main Bearing Support Ring
104254	Bearing Support	104245	Ring
104265	Pressure Control & Cover	104247	Lock Ring R. H.
105005	Valve & Piston	104248	Lock Ring L. H.
105007	Rotor	104256-1	Main Bearing Support
106129	Pressure Control & Cover	104257	Quill Shaft
106931		105006	Cover Housing

(S) - Shop is requested to supply labor time.

ORDERING QUANTITY: 500 units @ \$0 per month

Machine Section (Machining Section) (Packing)

Part No.	Name	Type	Current Price	Target Price	Current Cost	Target Cost	Current Cost	Target Cost	Current Cost	Target Cost	Current Cost	Target Cost	Current Cost	Target Cost	Current Cost	Target Cost	Current Cost	Target Cost
106123	Spacer	Standard	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
106127	Shim	Standard	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60
106128	Wear Seal	Standard	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
106130	Rotor Hub	Standard	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
106742	Ring Bearing	Standard	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00
106743	Gasket	Standard	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
106959	Spiral Pin	Standard	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60
Comprehensive Totals (Machining Section)																		
Machine Parts			1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
General Machine Parts			2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
Precision Machine Parts			18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00
Sectional Totals			12.60	12.60	12.60	12.60	12.60	12.60	12.60	12.60	12.60	12.60	12.60	12.60	12.60	12.60	12.60	12.60
Forming Section																		
106128	O Seal	Molded	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
106748	Gasket	Standard	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
106123	Shim	Standard	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60
Comprehensive Totals (Forming Section)																		
Forming Parts			3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10
Sectional Totals			3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10

The Cost Coordinator in the Purchasing Department receives the committee's breakdown sheet. In turn, he breaks it down according to the buying sections of the department on his own worksheet. He fills in all information up to and including the target cost and totals figures according to section (Machining Section, Forming Section, etc.). This is page 1 of a 2-page sheet in the sample project.

Information from the coordinator's worksheet is transcribed onto this form on which the buyer can list current and competitive bidders. He is then ready to negotiate or renegotiate prices. It is also the buyer's duty to review blueprints with the vendor to try for better manufacturing methods to meet the target cost. In cases where tolerances or design changes are needed, the buyer refers this information back to the cost coordinator for discussion with the cost committee. When all prices are final, the buyer completes this sheet by filling in vendor, new price, savings, date of quote, and remarks, if any, and forwards it to the coordinator.

as 8-105 9430 HAMILTON STANDARD
Project Extractor Assembly COST ANALYSIS FOR COST COMMITTEE
Date May 15, 1955
Basis for Quote 500 Units @ 50 per month Section Machining

Part Number	Part Name	Vendor	Current Price	Target Price	New Price	Savings	Quote Date	No. Recs	Remarks
106121	Spacer	* Arrin Screw Co.	\$ 3.50	\$ 3.00	\$ 2.70	\$.80	6/18/55	1	Tooling \$600
		R. A. V. Machine Co.			3.10	.10	6/18/55		Tooling \$650
		G. A. V. Screw Co.			3.50	No Difference	6/18/55		Tooling \$300
106958	Spical Pin	* R. A. V. Machine Co.	.60	.25	.20	.10	6/15/55	2	Tooling \$ 10
		Arrin Screw Co.			.70	.10	6/12/55		Tooling \$ 35
		Allstate			.10	.20	6/12/55		Tooling \$ 50
106130	Motor Hub	* Jaxon Mfg. Co.	2.50	2.00	2.00	.50	6/9/55	1	Tooling avail.
		A. B. C. Tool			2.10	.10	6/9/55		Tooling \$450
		Roll Mfg. Co.			2.65	.15	6/9/55		Tooling \$300
106712	Bearing Ring	* Mary Prec. Corp.	18.00	15.00	13.50	4.50	6/19/55	1	Tooling \$1800
		Wyoming State			19.00	-1.00	6/19/55		Tooling \$ 900
		Allstate			18.00	No Difference	6/19/55		Tooling \$5000

* Indicates the vendor and price to be used on the cost study.



RECAP SHEET
EXTRACTOR ASSEMBLY (5016980)

TYPE	LATEST ACCTG. COST		ACTUAL COSTS		TARGET COSTS	REVISED COSTS	SAVINGS IN DOLLARS	SAVINGS IN PERCENTAGE	REMARKS
	UNIT PRICE	NO. UNIT	UNIT PRICE	UNIT PRICE					
Machining Section									
Screw Machined	\$ 5.00	8 4.50	\$ 4.10	\$ 3.80	\$ 3.25	\$ 2.90	\$1.20		
General Machined	3.00	1.00	2.90	2.90	2.00	2.00	.90		
Precision Machined	10.00	10.00	18.00	18.00	15.00	11.90	4.50		
TOTALS	\$45.00	\$45.50	\$46.80	\$46.38	\$40.25	\$37.80	\$6.00	13.9%	
Forming Section									
Molded Parts	\$ 4.50	2 2.50	\$ 4.00	\$ 3.00	\$ 3.25	\$ 3.00	\$1.00		
Stamped Parts	.25	.25	.60	.60	.90	.30	.30		
TOTALS	\$ 4.75	\$ 2.75	\$ 4.60	\$ 3.60	\$ 3.75	\$ 3.30	\$1.10	28.1%	
New Material Section									
Castings	\$12.50	\$12.50	\$60.00	\$60.00	\$11.00	\$15.00	\$4.00		
TOTALS	\$12.50	\$12.50	\$60.00	\$60.00	\$11.00	\$15.00	\$4.00	6.6%	
Cumulative Totals									
Machining Section	\$45.00	\$45.50	\$46.80	\$46.38	\$40.25	\$37.80	\$6.00		
Forming Section									
New Material Section									
DEPARTMENTAL TOTALS									



Project: Extractor Assembly
Ordering Quantity: 500 units @ 50 per month

CASTINGS

Page 1

PART NUMBER	PART NAME	TYPE	LATEST ACCTG. COST		ACTUAL COSTS		TARGET COSTS	REVISED COSTS	DATE OF QUOTE	VENDOR	SAVINGS \$	REMARKS
			UNIT PRICE	NO. UNIT	UNIT PRICE	UNIT PRICE						
C-101104	Housing	Casting	\$12.00	1	\$12.00	\$19.00	\$19.00	\$16.00	6/9/55	Jarbo Casting Co.	32.00	Eastern Equip. \$190.00 30 reduction - Poor casting design.
C-101334	Shaft Body	Casting	18.00	1	18.00	18.00	18.00	16.00	5/10/55	Elva Foundry Corp.	None	
C-104242	Supply Housing	Casting	6.00	1	6.00	7.00	7.00	6.00	6/1/55	Jarbo Casting Co.	1.00	Eastern equip. avail.
C-104244	Shaft Support	Casting	9.00	1	9.00	10.00	10.00	9.00	6/10/55	Intire Foundry Co.	1.00	Eastern equip. \$1800.00 Casting Tolerances are impractical.
C-105006	Housing Cover	Casting	4.50	1	4.50	6.00	6.00	6.00	6/11/55	Alto Metals Corp.	None	
TOTALS			\$49.50	5	\$49.50	\$50.00	\$50.00	\$41.00			34.00	
Cumulative Totals: (New Material Section)												
Castings			\$49.50	\$49.50	\$50.00	\$50.00	\$41.00	\$41.00			34.00	
SECTIONAL TOTALS			\$49.50	\$49.50	\$50.00	\$50.00	\$41.00	\$41.00			34.00	

The coordinator uses the buyer's data to complete his worksheet (3). He then makes a final analysis by buying section, and a complete recap sheet for submission to the Cost Analysis Committee.

The Pulse of Business

JANUARY, 1956

PURCHASING'S

Summary of economic conditions

1955 shapes up as a record year for profits. They're expected to total about \$43 billion before and \$21.5 billion after taxes. In 1939, after tax profits were \$5 billion, and in the big boom year of 1929 they were only \$8.4 billion.

So profits look historically high and vulnerable. But actually they aren't, if you use the most objective yardstick - national income. Business profits took 9.5% of the national income in 1929, and 7.0% in 1939. In 1955 they took only about 6.7%. Higher corporation taxes and other tax policies designed to even out the distribution of national income have permitted wages and salaries to increase much faster in the last 25 years.

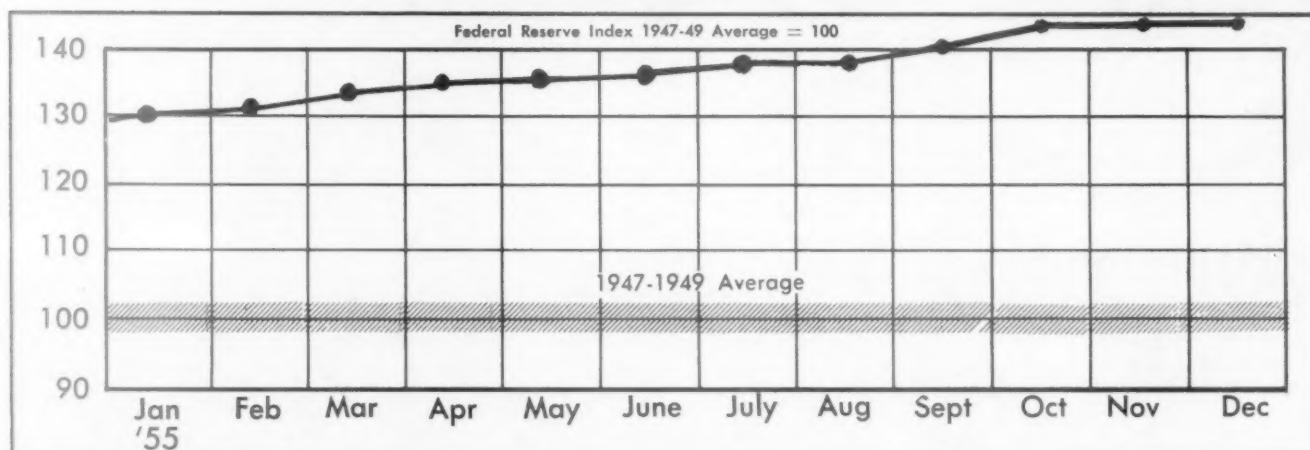
If anything, profits may be too low to support sustained economic growth. That's one reason higher steel prices seem to be in the cards. So far, however, inadequate profits haven't caused many expansion plans to be shelved. In fact, the Department of Commerce estimates that expenditures for plant and equipment by U.S. business will be up about 12% in 1956 to \$31.6 billion.

Optimism is still widespread. General Electric is planning to spend about \$500 million on new facilities in the next three years, for example. G.E.'s president, Ralph Cordiner, expects his company's sales to be up by 10-15% in '56. He thinks business over-all will rise 4-6% during the coming year. Joseph L. Block, president of Inland Steel, says "the first six months of 1956 should establish another new high in steel production."

Biggest barrier to higher profits and sales may be shortages of basic materials. They may also cause higher prices. "If you can tell me" says G.E.'s Cordiner, "what the prices of steel, copper, iron, and aluminum will be, then I can tell you about our prices in 1956." If Mr. Cordiner is right, then this year should be one of real challenge and opportunity for the alert purchasing executive. His success in keeping material costs in line will have a greater than usual effect on his company's sales and profits. This becomes clearer when you consider that despite the booming economy, there is widespread price competition for many finished products.

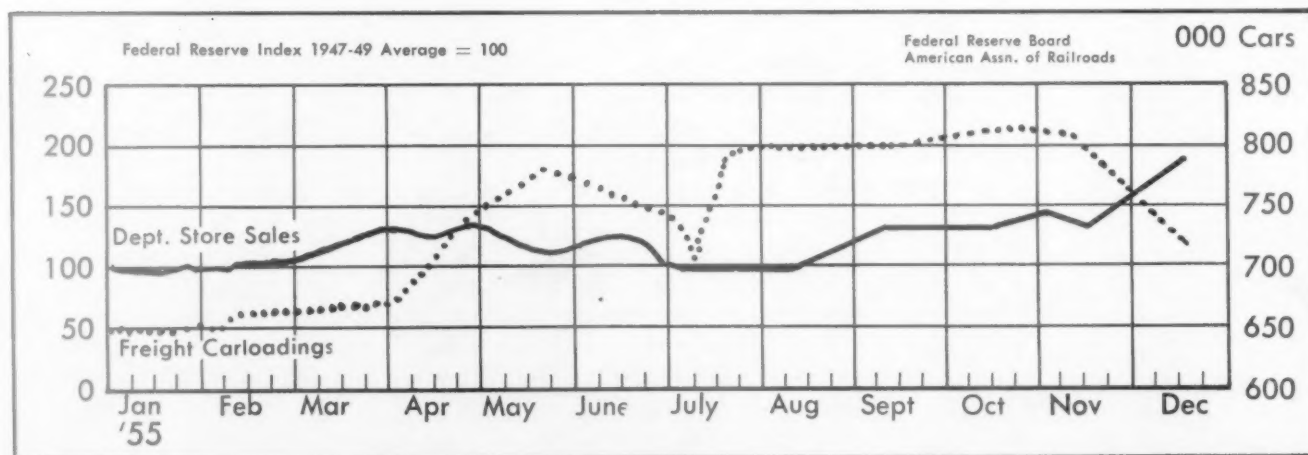
THE PULSE OF BUSINESS

PRODUCTION



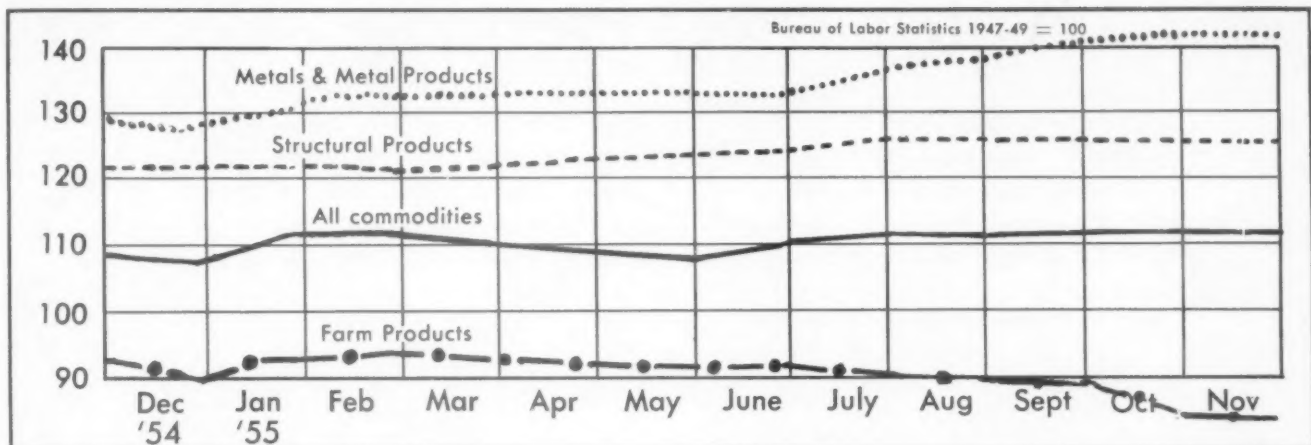
	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
Industrial Production Index	1947-49=100	144	143	128	+ 0.8	+12.4
Steel Production (Weekly)	000 net tons	2,384	2,372	1,958	+ 0.5	+21.8
Electric Power Production (Weekly)	mil KWH	11,359	10,853	9,612	+ 4.7	+18.2
Bituminous Coal Production (Weekly)	000 net tons	10,460	10,100	8,603	+ 3.6	+21.6
Auto, Truck & Bus Output (Weekly)	units	210,515	200,907	166,703	+ 4.8	+26.3
Petroleum Output (Daily Average)	000 bbls.	6,716	6,661	6,181	+ 0.8	+ 8.7

TRADE



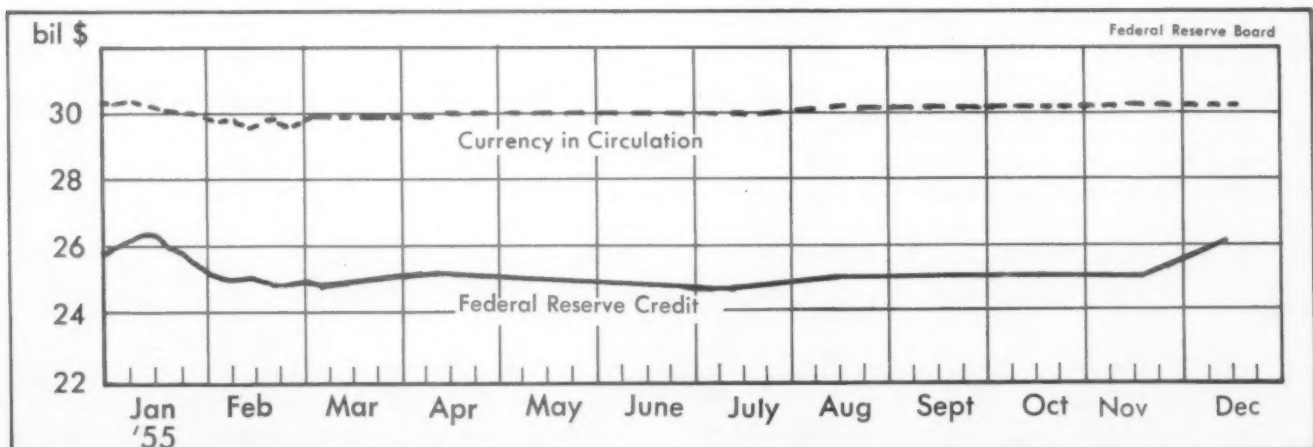
	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
Dept. Stores Sales Index (Fed. Res.)	1947-49=100	197	128	192	+53.9	+ 2.6
Commercial Failures (Dun & Bradstreet)	no.	209	237	221	-11.9	- 5.4
Freight Carloadings	cars	728,216	808,709	661,777	- 9.6	+10.0
Miscellaneous Carloadings	cars	377,252	404,252	348,654	- 6.7	+ 8.2

PRICES



	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
All Commodities (BLS)	1947-49=100	111.2	111.6	109.8	- 0.3	+ 1.3
Farm Products	1947-49=100	84.1	86.8	93.1	- 3.2	- 9.7
Metals & Metal Products	1947-49=100	143.0	142.4	129.7	+ 0.4	+10.3
Structural Products	1947-49=100	125.5	126.8	121.8	- 1.0	+ 3.0
Steel Billets (Pittsburgh)	net ton	\$68.50	\$68.50	\$64.00	0	+ 7.0
Steel Scrap, heavy melting, Pitts	net ton	48.50	45.00	33.00	+10.8	+46.9
Copper, electrolytic	lb.	.43	.43	.30	0	+43.3
Rubber (rib-smoked sheets)	lb.	.48 $\frac{1}{2}$.44 $\frac{1}{2}$.28 $\frac{5}{8}$	+ 8.9	+69.2

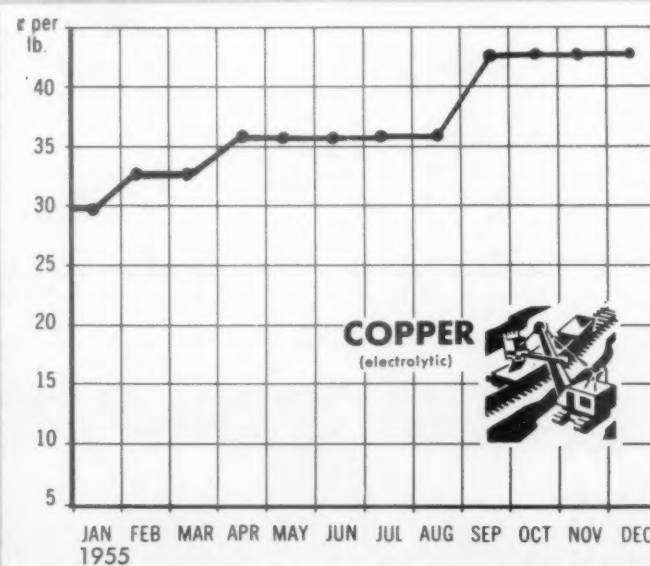
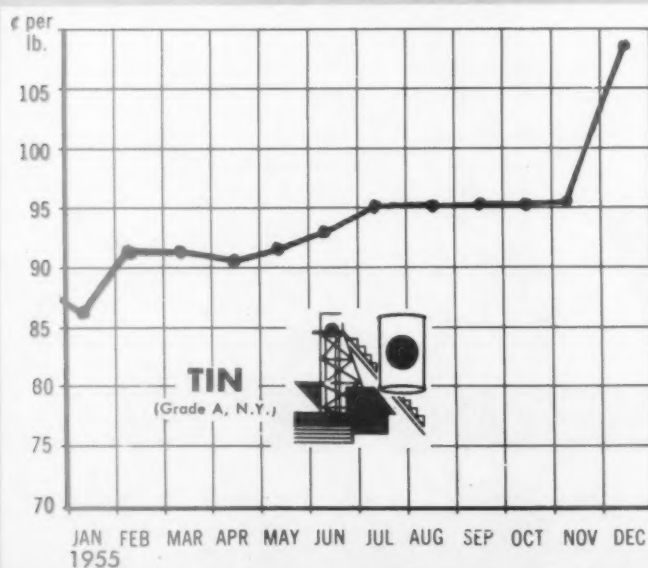
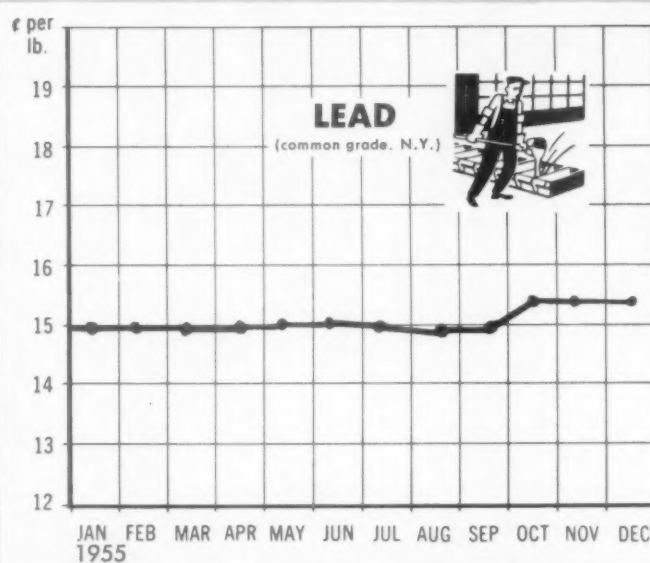
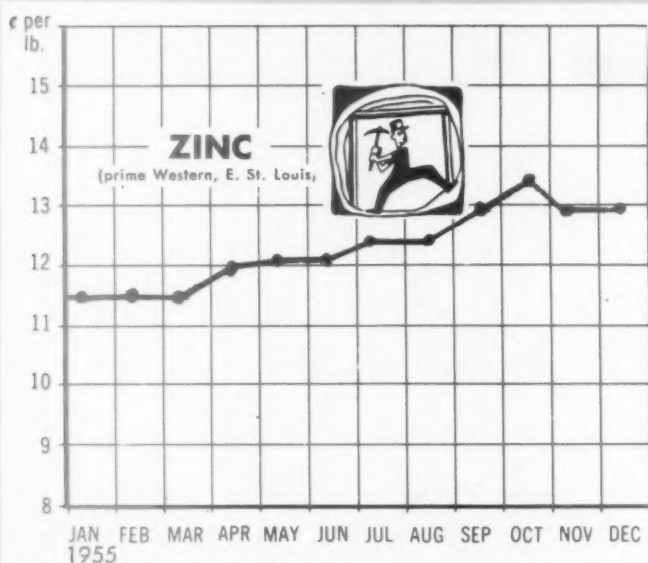
FINANCE

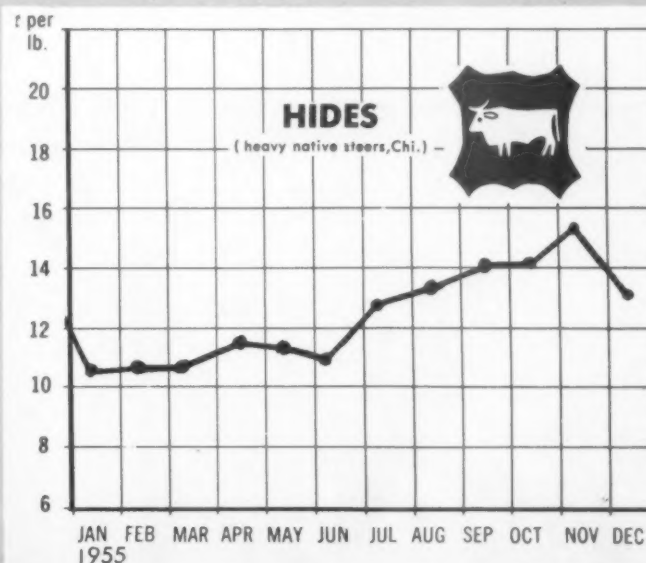
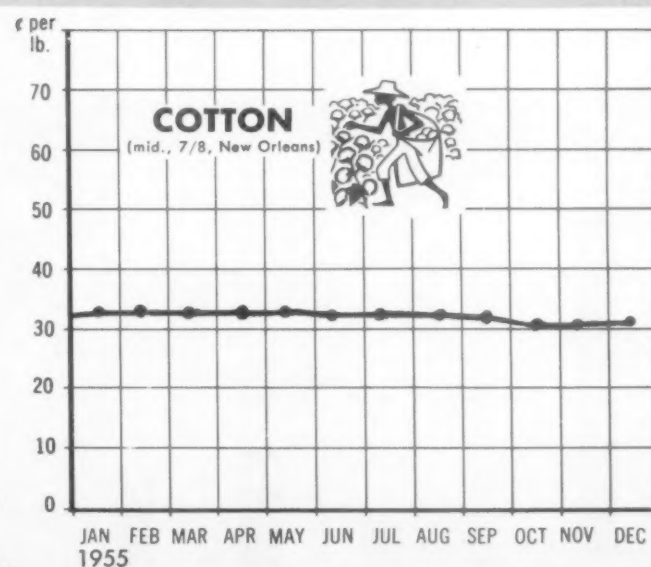
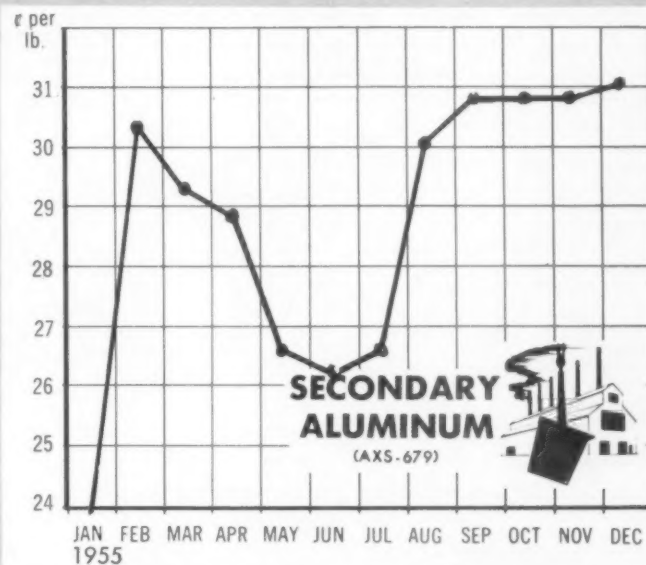
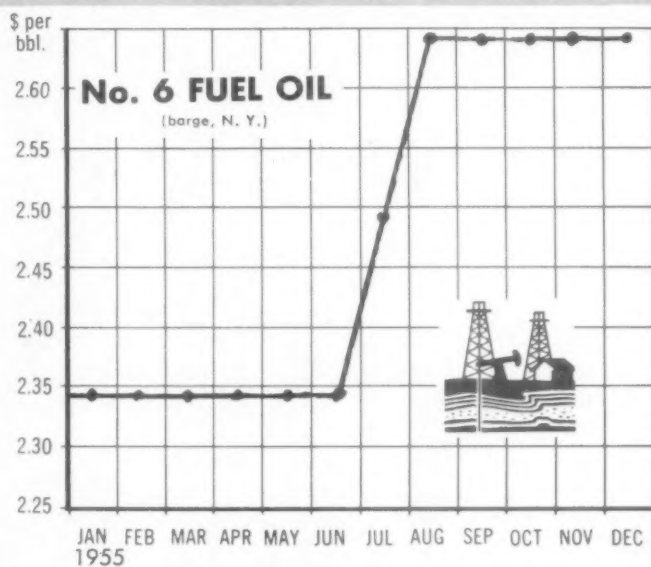
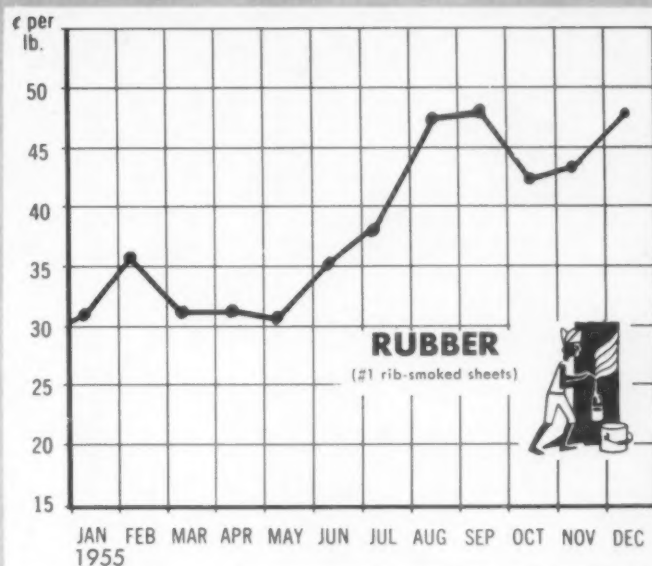
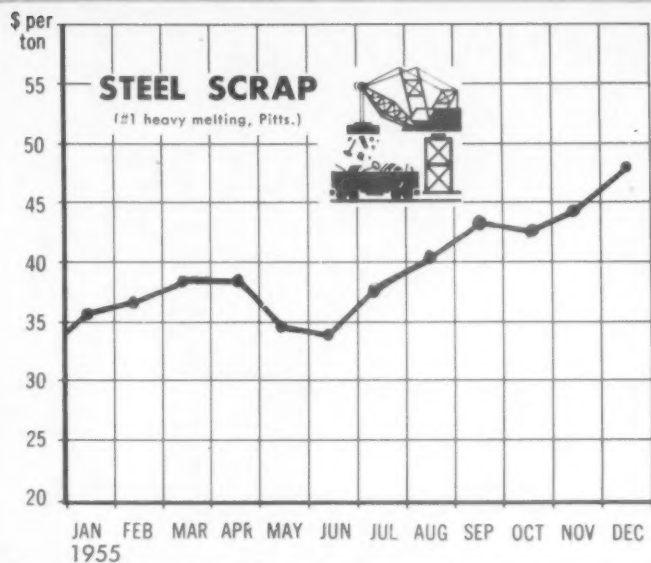


	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
Stock Prices (Standard & Poor's)	1926=100	363.9	343.3	276.8	+ 6.0	+31.5
Bank Clearings (New York)	mil \$	11,084	8,953	9,590	+23.8	+15.5
Federal Reserve Credit	mil \$	26,274	25,693	25,858	+ 2.2	+ 1.6
Currency in Circulation	mil \$	31,070	30,657	30,697	+ 1.3	+ 1.2

Metals Continue Tight; Still Higher Prices Probable

1955 has been a year of metals boom. During the year, the price of every important commercial metal advanced. As yet the end of the trend isn't in sight. Zinc and lead have been the least prone to advance. Demand is brisk for these metals and *their prices could be higher in the next two months*. As every PA that buys them knows, quoted prices for some of the tighter metals have less meaning. Gray markets are growing. Actual price levels are probably quite a bit higher than official statistics indicate. There should be a turning point though. A lot of today's buying decisions must be influenced by the belief that higher prices are ahead. So, if they can get delivery, buyers are accepting shipments of critical metals in excess of requirements.





THE PULSE OF BUSINESS

Sales, Inventories and New Orders

Value of Manufacturers' Sales Seasonally Adjusted (Millions of Dollars)

All manufacturing industries.....	22,489
Durable-goods industries.....	10,295
Primary metal.....	1,596
Fabricated metal.....	1,067
Machinery.....	2,976
Transportation equipment.....	2,159
Lumber and furniture.....	952
Stone, clay and glass.....	582
Other durable goods.....	963
Nondurable-goods industries.....	12,194
Food and beverage.....	3,975
Tobacco.....	291
Textile.....	1,010
Paper.....	728
Chemical.....	1,619
Petroleum and coal.....	2,119
Rubber.....	346
Other nondurable goods.....	2,106

Book Value of Manufacturers' Inventories Seasonally Adjusted (Millions of Dollars)

All manufacturing industries.....	43,168
Durable-goods industries.....	23,916
Primary metal.....	3,095
Fabricated metal.....	2,523
Machinery.....	7,973
Transportation equipment.....	5,728
Lumber and furniture.....	1,603
Stone, clay and glass.....	856
Other durable goods.....	2,138
Nondurable-goods industries.....	19,252
Food and beverage.....	4,415
Tobacco.....	1,853
Textile.....	2,322
Paper.....	1,008
Chemical.....	3,006
Petroleum and coal.....	2,744
Rubber.....	835
Other nondurable goods.....	3,069

Manufacturers' New Orders (Seasonally Adjusted)

All Manufacturing Industries.....	22,870
Durable goods industries.....	10,790
Nondurable goods industries.....	12,080

1954	1955				
Oct.	June	July	Aug.	Sept. (r)	Oct. (p)
22,489	27,111	26,731	27,229	27,224	26,640
10,295	13,527	13,503	13,745	13,692	13,276
1,596	2,315	2,138	2,285	2,394	2,312
1,067	1,383	1,407	1,510	1,436	1,370
2,976	3,547	3,475	3,484	3,471	3,452
2,159	3,329	3,615	3,413	3,438	3,294
952	1,208	1,198	1,280	1,236	1,133
582	688	657	682	670	669
963	1,057	1,013	1,091	1,044	1,046
12,194	13,584	13,228	13,484	13,532	13,364
3,975	4,329	4,223	4,291	4,249	4,105
291	318	316	330	319	326
1,010	1,148	1,133	1,109	1,131	1,108
728	844	834	874	870	883
1,619	1,985	1,844	2,001	2,010	1,961
2,119	2,386	2,299	2,382	2,346	2,286
346	465	471	456	n.a.	n.a.
2,106	2,109	2,108	2,041	2,151	2,239

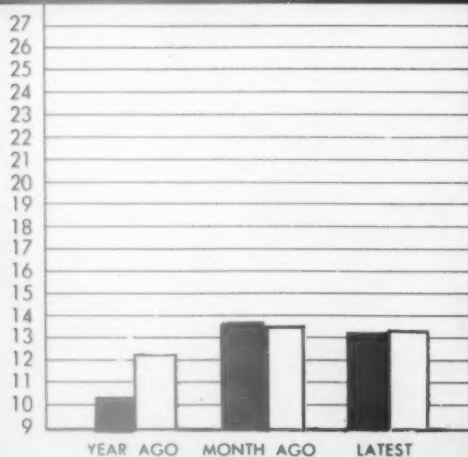
p—preliminary

r—revised

n.a.—not available

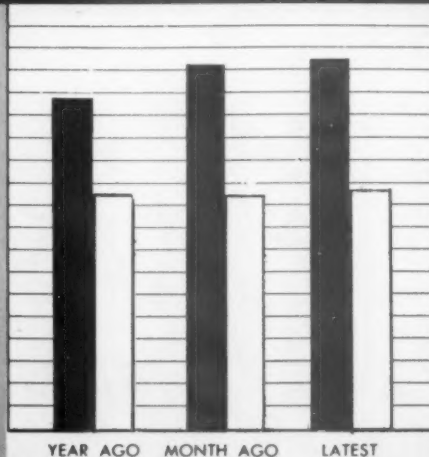
BILLIONS
OF \$

SALES

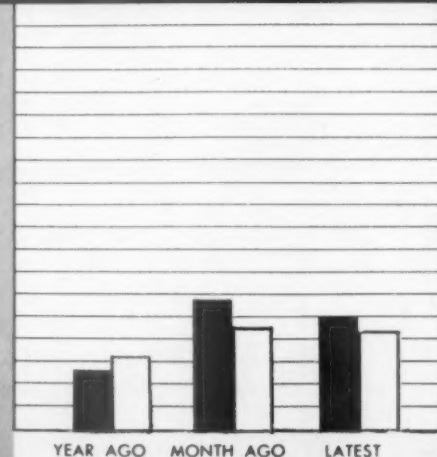


DURABLE GOODS

INVENTORIES



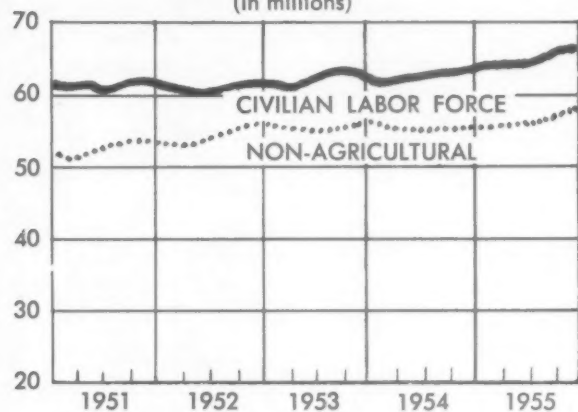
NEW ORDERS



NON-DURABLE GOODS

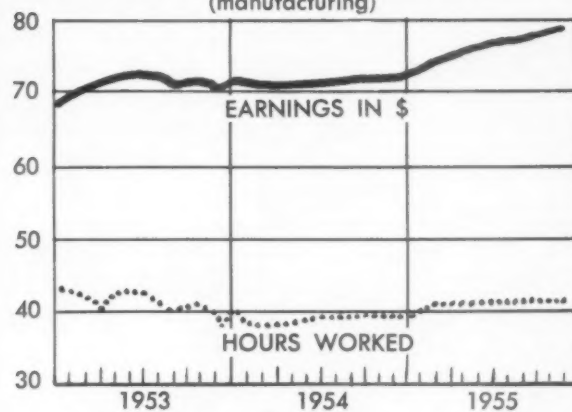
BILLIONS
OF \$

EMPLOYMENT (in millions)



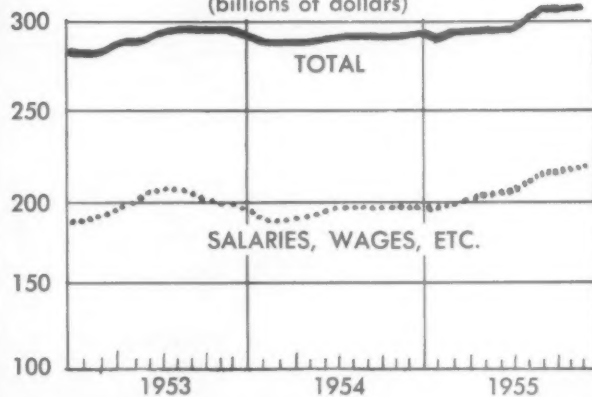
Source: Bureau of the Census

AVERAGE WEEKLY EARNINGS, HOURS (manufacturing)



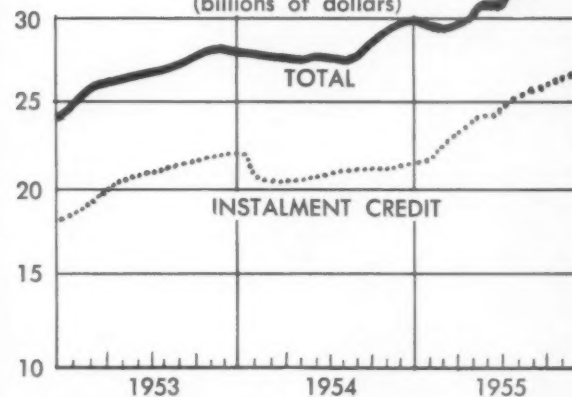
Source: Department of Labor

PERSONAL INCOME (billions of dollars)



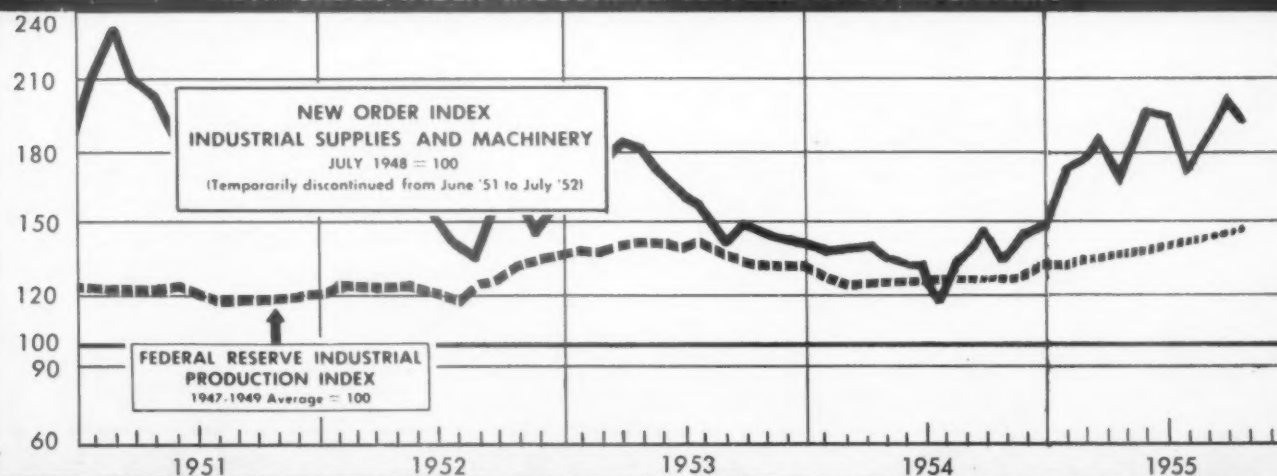
Source: Department of Commerce

CONSUMER CREDIT (billions of dollars)



Source: Federal Reserve Board

NEW ORDER INDEX INDUSTRIAL SUPPLIES AND MACHINERY



Source: American Supply & Machinery Manufacturers' Association

Straws in the Trade Wind

"FAIR TRADE" FAILING - "Fair Trade" is losing some strong supporters.

Sunbeam Electric and General Electric are among the companies that have at least partially abandoned retail price fixing. One reason is a recent Michigan court decision. It made "Fair Trade" unenforceable on non-signers of price-fixing agreements. As long as the economy remains prosperous, pressure will be on for further easing of the depression-created "Fair Trade" laws.

MINIMUM WAGE TO HIKE PRICES? - The new \$1 per hour minimum wage law may

bring higher prices for some products. In southern textile and woodworking industries, some wage rates are below the minimum just established. Raising them means that the higher-paid workers will have to receive hikes, so that differentials can be maintained. Some economists hold that raising the wage floor has a tendency to boost all wages - so that industries where all wages have been over the minimum may not be immune to pressure.

STEEL GETS TIGHTER - Some steel executives now foresee a complete sell-

out of mill capacity until June at least. Auto factories continue to consume record tonnages, although there have been reports that orders from Detroit have been slowing somewhat. The high rate of industry expansion and commercial construction is expected to make steel even tighter. Even if there is no general price increase in the next 5 or 6 months, scattered boosts by individual producers will raise average costs of steel.

OIL STOCKS DROP - Cold weather, plus excellent demand for refinery res-

idues for asphalt and similar products, has caused stocks of fuel oil to drop well below year-ago levels. Prices have gone up several times in the last year. Any further price hikes will probably cause some users to switch to coal, which becomes more competitive with price increases in oil.

COPPER IS SCARCER - Copper, at 43¢, is still cheap in this country.

In the London market it is the equivalent of 50¢. There are no signs of any price declines. Demand is heavy and labor trouble in Chilean mines is making an already critical supply situation even tighter.

SIGN OF A TURNING POINT? - For the past two months, sales and new orders

have been falling off, on a seasonally adjusted basis. Inventories have continued to climb. This means business has been producing more than it has been selling - and the flow of new business has been falling off. If the trend continues (and there's no certainty it will) inventories will eventually have to be trimmed, which may take the edge off the boom.

MATERIAL MANAGEMENT

New Horizon for PURCHASING



A divisional production control manager, H. Harbeck, describes an actual material management problem at a Sperry meeting. An open, round-table discussion followed this presentation.

ONE of the newer concepts of modern industry is the science of Material Management. Broadly, this is the unified control of every aspect of the movement of purchased items through a plant. It covers every activity involved in getting material from a vendor into the end product.

The scope of Material Management is large, and in many cases, complex. Thus it is open to many interpretations, and takes in many functions within a given company. Two facts stand out, however: (1) Purchasing plays a key role—in fact, a decisive role—in any such program; (2) To play its part effectively, purchasing must fully understand its own job and coordinate its efforts with those of all other departments.

It's easy to make such generalizations, more difficult to put them into action. Yet the demands of growing industry and advancing technology cannot be denied. Material Management, by the very nature of industrial progress, is bound to take its place as one of the important aspects of modern business administration, along with management of production, manpower, and finance.

The overall aim of this "scientific buying" issue of PURCHASING is to help equip purchasing agents with some of the advanced techniques of procurement. It is designed to lead the purchasing man to appreciate the full profit potential of his position. This is one aspect of moving toward full participation in any Material Management program.

Another basic aspect is the indoctrination of all departments in the meaning and principles of Material Management. Material Management embraces functions that are part engineering, sales, planning, production control, purchasing, cost and quality control. Educating all these groups requires some formal system, carried out with the full support, if not the inspiration, of top management. Regardless of where the impetus comes from, this sort of program presents purchasing with an excellent opportunity to broaden its own horizons and make important contributions to company operations.

Sperry Gyroscope Company, division of Sperry Rand Corporation, recently instituted a 15-week program in Materials Management. Under the leadership of Louis J. DeRose, chairman of the Management Department of the School of Business, Fordham University, representatives from 10 different departments of the company meet weekly for two 3-hour sessions. Mr. DeRose uses what might be called the controlled "bull-session" approach, in which members of the group discuss actual material control problems within the framework of the course outline. Mr. DeRose has held similar courses at other leading firms.

The Sperry course outline which follows, can be adapted to the needs of a company in a position to establish a similar course. It also serves as an excellent check list on the scope of your purchasing knowledge.

Moderator DeRose (standing) stimulates full participation by questions and requests for information. Others are (l. to r.): R. Burnard, pricing supervisor, Aero Division; J. Schmeidel, planning and material control superintendent, Aero Division; G. Kasper, standards engineering, Marine Division, and L. Beach, engineering services, Marine Division.



Sperry's Course Outline for Training in Principles and Techniques of Material Management

I. Introduction:

Scope and complexity of the Material Management functions as they relate to:
product material and specification requirements;
source of supply requirements;
cost and price requirements.

II. Material Specifications and Schedules

- A. Determination and description of Quality
 - 1. Incomplete specifications
 - 2. Modifications in specifications aimed at cost reductions
 - 3. Modifications in specifications suggested by suppliers (principles and techniques of value analysis)
- B. Development of material schedules
 - 1. Material and inventory control
 - 2. Determination of economical order quantities

(Theory and practice of appropriate formulae)

III. Appraisal and Development of Suppliers and Sub-Contractors

- A. Development of alternate sources
 - 1. Necessity of alternate sources
 - 2. Dangers in dealing with unproven sources
- B. Techniques of financial analysis
 - 1. How to read and interpret financial statements
 - 2. The use of vendor rating systems
 - 3. Evaluating vendor performance
- C. Requests for price and delivery quotations
 - 1. Selection of source
 - 2. Legal significance of a "Request to Quote"
 - 3. Competitive quoting and how to recognize it
 - 4. The problem of sole sources

IV. Selection and Use of Contract Types and Terms

- A. Public laws affecting defense material
- B. Price redetermination articles
- C. Cost type contracts
- D. Incentive type contracts
- E. Annual contracts
- F. Straight fixed price contracts—advantages and shortcomings
- G. Time and material contracts
- H. Selection of contract terms
 - 1. Review and discussion of purchaser's standard terms and conditions
 - 2. Significance of vendor's counter-conditions

V. Evaluation of Contract Proposals

- A. Techniques of cost and price analysis
 - 1. Use of learning curve analysis
 - 2. Use of cost estimates—role of the cost estimator
 - 3. Use of cost breakdowns
 - (a) when and how to obtain cost breakdowns
 - (b) how to analyze and interpret cost breakdowns
- B. Appraisal and evaluation of other than price considerations.

VI. Purchase Contract Negotiation

- A. Objectives of negotiation
- B. Techniques of negotiation
 - 1. Value and price knowledge
 - 2. Recognizing and overcoming "salesmanship"
 - 3. Using "salesmanship" in reverse (Mock negotiations between "buyers" and "sellers")
 - 4. Considerations for price reductions
 - 5. The ethics of negotiation

VII. Follow-up and Administration of Material Requirements

- A. Follow-up and expediting
- B. Changes in quantity, schedule, and specifications
- C. Delivery ahead of schedule
- D. Inspection and acceptance (Review and discussion of vendor's and purchaser's material review procedures)
- E. Material, design and workmanship warranties
- F. Cancellations and terminations

VIII. Administration and Evaluation of Material Management

- A. Coordination of planning, purchasing, cost (estimating and control), engineering, and marketing.
- B. Appraisal of the functions and personnel.



Informal talks between sessions help promote inter-departmental understanding. Seated are (l. to r.): John Preuss, production planning; John Geiger, representative, Navy sales; R. Thompson, buyer, engineering purchasing. Standing are: T. Reilly, buyer, engineering purchasing; J. Van Put, estimating supervisor, and P. Tamburrelli, buyer, Aero Division.

Management's intense interest in the course is evidenced by its regular attendance and observation. Watching one group in action are (left) John Rutherford, assistant to the executive vice president and general manager, and A. T. O'Rourke, cost control superintendent and conference chairman.



PRODUCT		JANUARY		FEBRUARY		MARCH		APRIL		MAY	
NO.	REQ'D	UNIT PRICE	PRODUCT COST	UNIT PRICE	PRODUCT COST	UNIT PRICE	PRODUCT COST	UNIT PRICE	PRODUCT COST	UNIT PRICE	PRODUCT COST
101	4 YRS	.29	50 .580		.580	.29	100 1.160		1.160	.295	M 1.160
		.31	50 .620		.620						
102	2	2.250	4.500		4.500		4.500	3.35	E		
103	1	3.280	100 3.280	3.280	70 2.296		2.296	3.38	E		
				2.500	30 .750		.750	2.65	E		
104	10	.40	25 1.000		25 1.000		1.000				
		.38	50 1.400		50 1.400		1.400				
		.39	25 1.960		25 1.960		1.960				
105	2	1.75	100 3.500		3.500		3.500				
SUB TOTAL			16.840		16.606		16.566				
TOTAL											

Index Shuttle Sheet (right) is filled in by buyers with latest price and source information. It moves back and forth between them and the person computing the index.

PAGE 1 OF 1

PRODUCT

PART NO.
OR MATERIAL

101

102

103

104

105

CODE FOR PRICE
L. CHANGE IN LA

Product Price Index—

Purchasing's Answer to Management's Questions

DIVISION			
MAY		JUNE	
COST	UNIT PRICE	COST	UNIT PRICE
50		1.200	

Index Record Card (left), to which data from shuttle sheet is transcribed, is basic record for computing index. It must be maintained and kept neatly and accurately.

PRODUCT PRICE & COST INDEX										PURCHASE RESEARCH & ANALYSIS						
DIVISION										Report prices as of the 25th of each month. Indicate N.C. (No Change) in price column where price is same as the previous month.						
NO. SERIAL	ITEM NAME OR DESCRIPTION	REQ'D	SUPPLIERS	% OF BUY	JAN.		FEB.		MAR.		APR.		MAY		JUNE	
					UNIT PRICE	CODE	UNIT PRICE	CODE	UNIT PRICE	CODE	UNIT PRICE	CODE	UNIT PRICE	CODE	UNIT PRICE	CODE
1	59 Cloth	4 yds.	"A" Co.	50	.29		N.C.		.29		N.C.		.295	M	N.C.	
			"B" Co.	50	.31		N.C.		(100% of business with "A" Co.)							
2	Packet	2	"C" Co.	100	2.25		N.C.		N.C.		3.35	E	3.02	N	N.C.	
3	Container	1	"D" Co.	100	3.28		3.28	70%	N.C.		3.38	E	N.C.		3.38	50%
			"E" Co.				2.50	30%	N.C.		2.65	E	N.C.		2.65	50%
							(New source added)								(Changing % of business)	
4	Sub	10	"F" Co.	25	.40		N.C.		N.C.		N.C.		(New source and change % split)			
			"G" Co.	50	.38		N.C.		N.C.		N.C.		.35	75%	N.C.	
			"H" Co.	25	.39		N.C.		N.C.		N.C.		.39	25%	N.C.	
			"I" Co.										.35	25%	N.C.	
5	Item	2	"J" Co.	100	1.75		N.C.		N.C.		N.C.		N.C.		N.C.	

FOR PRICE CHANGE IN MATERIAL COST: N. NEGOTIATED, S. SUBSTITUTE MAT'L, M. CHANGE IN MATERIAL COST, D. DESIGN OR ENGINEERING, Q. QUANTITY ONLY, O. OTHER (Explain)

FORECASTING costs and measuring performance are two of management's major problems. Purchasing has raw data in its routine records which, when properly used, can help solve these problems. It has the material to make up a price index of productive parts and commodities. Not only an aid to management, the index is also a valuable tool for purchasing itself. Here's what a good index can do.

1. It can predict what direct material costs for any of the company's products will be as much as two or three months before

actual cost data is available from accounting. The index is normally more than 99% accurate when properly used for this purpose.

2. It can measure precisely the cost effect of design changes, market fluctuations, etc. All such data are invaluable for long range planning.

3. When compared with other indexes, it can show how effectively purchasing controls costs.

4. It can serve as a basic yardstick for all cost reduction programs on purchased parts and materials.

The word "index" brings up some scary pictures. One thinks

of fancy calculations by higher mathematicians.

It takes work just like everything else that is worthwhile. But there is no basic reason why the average purchasing department should not be able to devise a very good index. Once the index has been developed, it can easily be kept up by a first-class clerk. It requires a certain amount of thought to set up an index. But it isn't too hard if you observe certain simple rules.

The concept of a price index is quite simple. It merely involves substituting an index number for some dollar total. The index num-

TABLE I

COMPUTATION OF PRODUCT PRICE INDEX

(Base Period Cost = \$16.840 = Index of 100.0)

Month	Cost	Computation	Index
January	\$16.840	$\frac{16.840}{16.840} = 1.0$	100.0
February	16.606	$\frac{16.606}{16.840} = .986$	98.6
March	16.566	$\frac{16.566}{16.840} = .984$	98.4
April	18.881	$\frac{18.881}{16.840} = 1.121$	112.1
May	18.376	$\frac{18.376}{16.840} = 1.091$	109.1
June	18.230	$\frac{18.230}{16.840} = 1.083$	108.3

ber is computed by dividing the current cost by some base period cost and then multiplying by 100. Thus, costs are measured as a percentage of the base period or reference point. This permits easy comparison with other indexes and with other periods of time.

The base period can be the average of any month or year. For example, the Bureau of Labor Statistics uses a 1947-49 average as a base period for most of its indexes. This period was selected because theoretically it is a "normal" one. Actually, BLS indexes would be just as good if the agency used some other period. The selection is pretty much a matter of arbitrary choice.

A Simple Example

Suppose the sole commodity your department buys is copper, and you wish to develop price index. To simplify your calculations with nice even numbers take a base period when copper sold for 10¢ per pound. This puts your base period month in 1938 or 1939.

During World War II, copper was frozen at 12¢ a pound. To compute your index during this period, divide 12¢ by the base

period price of 10¢. Multiply your answer of 1.20 by 100 and you get an index of 120. This means that copper was selling at price 20% higher than pre-war during World War II.

Today copper sells for 38¢. So our copper index now stands at 380 ($38¢/10¢ \times 100$). This, in turn, can be compared with indexes of other commodities to find out whether copper is historically relatively high or low in price.

Building Your Own Index

The copper example is good for a starter. But it's a little too simple for you to adapt to your own needs. You are probably buying several hundred different parts for any one of your company's products. To develop an index, you've got to combine their costs in some fashion.

It probably seems to you that the only way to get a really accurate index is to use all of the parts for a given product in it. This isn't necessary. You can get equally good results with a lot less work by using only 10-15% of the total number of parts in the index. The secret is selecting the right parts.

Here's what you do: Make a list of all the parts and materials you buy for a given product. Include part number, description, price, percentage of total buy from each supplier, and usage. With materials, you also must indicate the unit of purchase. If the material is bought by the foot or by the pound, for example, this should be indicated.

Make sure—and this is important—all the prices you use are those actually paid for shipments made during the base period you select. Whatever month you select as a base period is entirely up to you. It can be the start of a new model if model changes are important in your industry. Perhaps the simplest approach is to use current prices for your base period and develop the index from that point on.

Computing Base Period Cost

Usually the easiest way to develop a complete list of purchased items for a product is to get a bill of materials from engineering. Buyers can then fill in the needed price information. Then compute the value of each part in the product by multiplying the price times the usage. When there is more than one supplier for a part, be sure to take each supplier's price and multiply it by the percentage of business that he gets, times the usage of the part.

After performing this multiplication on each part, total up the values of the individual components. You get the total value of purchased items in the product. To cross-check your accuracy, you can sometimes get comparable figures from your cost department. Although they'll rarely agree with your figures completely (usually they're not figured on the same basis), it is often possible to reconcile the two sets of calculations.

Selecting the Sample

The next big step in setting an index is also a lot of work. Fortunately, like the first one, it's a one-shot operation and won't have to be done again. You are now ready to select your sample. To repeat, a sample that includes only 10-15% of the components of the product will give just as accu-

rate index as one that includes all. In fact, it might give better results since chances for clerical error are reduced with fewer items.

In selecting the sample, get the *least* number of parts that will equal about 90% of the total dollar value of purchased items in the product. If you buy 200 components for your product, you can usually get an excellent sample by using only 20 to 25 of them. Selection is rather tedious trial and error work. Start with the most costly part. That is, the most costly when usage is considered. This is not always the most costly in terms of unit price. Progressively select lower-cost items until you have a sample that equals at least 90% of your dollar volume.

You might find that, after you've selected all the big-ticket items for the sample, you've neglected low cost commodities like fasteners, washers, screws, etc. If you buy enough of these items so that they're actually important dollar-wise in the aggregate, pick the most expensive one and include it in the sample also.

How can a sample that includes only 10-15% of your parts be

really accurate? The answer lies in these two principles:

1. Prices, in general, tend to move in the same direction since they're usually subject to the same over-all economic forces.

2. Even if there is divergence in the price trend of individual items, the small-value components have little effect on total product costs. For example, suppose you buy \$100 worth of material for a product and don't include a 1¢ part in your sample. If this part increases 10% in price and there are no price changes on any other parts (which is unlikely), the error in the index is only 0.001%.

Two Forms Needed

Now that you've chosen your sample and your base period, you're ready to start to work on the actual index. You'll need two forms similar to the samples shown in this article. These are an "Index Shuttle Sheet" and an "Index Record Card."

The Shuttle Sheet, as the name implies, travels back and forth between buyers and whoever computes the index. If the index is computed monthly, buyers would get the Shuttle Sheet and

record changes on a given day each month. The Index Record Card is the permanent record from which the index is computed. Data from Shuttle Sheets is posted on this record. The Index Record Cards should be kept in some sort of a notebook so that they won't get out of order or be mislaid.

Gathering Data

The sample Index Shuttle Sheet and Index Record Card are the same as those used by several well known companies. Although the price data posted on them is fictitious, the methods for computing the index are identical with those now being used successfully.

So to show how data for an actual index is gathered and computed, let's use the information on these two sample forms as an example. An actual index would probably consist of a number of such forms. However, space limits our example to an index with only five parts.

These pointers will be helpful when gathering and computing data for your own index:

1. The columns headed "Code" on the Shuttle Sheet are used to

TABLE II

COMPUTATION OF ECONOMIC INDEX

Month	Unadjusted Base Period Cost	Cost of Product Changes	Adjusted Base Period Cost	Actual Cost of Sample	Economic Index
January	\$16.840	—	\$16.840	\$16.840	100.0
February	16.840	—	16.840	16.606	98.6
March	16.840	—	16.840	16.566	98.4
April	16.840	+\$2.200 — part 102 + .115 — part 103 <hr/> +\$2.315 Total	19.155	18.881	98.5
May	19.155	—	19.155	18.376	95.9
June	19.155	—	19.155	18.230	95.2

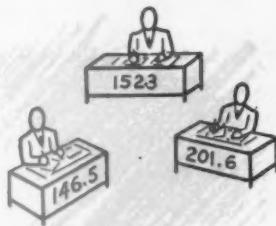
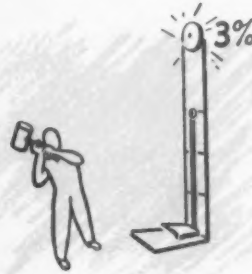
Using Price Indexes Profitably

Indexes can do more than just apprise management of future changes in cost. They're a tool for better purchasing, too. Here are some practical applications you can make of price indexes in your own department:



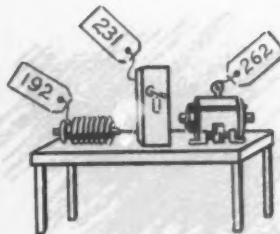
You can make up chart boards on which your product price and economic indexes are plotted against some standard like the BLS index of wholesale prices. Such presentations are invaluable when the Director of Purchases is reviewing his department activities with management.

You can use the index as a yard-stick for cost reduction programs. Suppose, at the beginning of the year, you decided that purchasing should set itself a goal of reducing costs by 3% during the year. The index will accurately measure the progress made toward this goal and stimulate interest in reaching it.



By breaking down the index by buyers—i.e. computing a separate index for each buying activity—you can stimulate a competitive interest in cost reduction.

If you make a number of products and maintain indexes for each of them, comparison of the different indexes will indicate which products should be given purchasing management's attention on cost reduction drives.



You can use an index as a tool for selling management on the tremendous profit-making possibilities of purchasing. The index graphically illustrates how good purchasing can make-or-break a company profit-wise.



These are but a few uses of price indexes. Companies that use them are constantly finding new ones. You can too.

indicate the reason for the price change. Explanation of the symbols ("E" for price change resulting from an engineering change, etc.) appears on the bottom of the sample Shuttle Sheet form. Since product cost can vary without change in price if the percentage of business given different suppliers is changed, this is also noted in the "Code" column.

2. When the part or material is bought by the foot, yard, pound, ton, etc., be sure to indicate this in the "Req'd" column on both forms. On the sample forms, you will note that the usage of part 101 is "4 yds." The unit price obviously is the price per yard. On the other hand, the "Req'd" column is the cost of a single part.

3. You note that four lines are allowed for each part on the sample forms. This gives plenty of room for more entries if there is a change in source, without messing up the whole form.

4. To compute the product cost for a multi-source part, you have to multiply the price paid each source, by the usage of the part, by the percentage of the business the supplier gets. It's a lot less work if you do this on a machine with an accumulative multiplier. A number of companies make such machines, including Friden, Marchant, etc.

5. It's a good idea to use a red pencil or red ink to post the "E" indicating an engineering change on the Index Record Card. As you will see later, such changes must be given special treatment if the index is to properly measure purchasing department performance.

Computing the Price Index

Using the information in our sample Index Record Card, we are now ready to compute the actual price index. In the example, January has been chosen as the base period so our base period cost is \$16,840. To find out what the index is each month, all we do is divide the actual total cost for the month (shown on the bottom of the Index Record Card) by the base period cost and multiply by 100. These computations are performed in Table I, Computation of Product Price Index.

You note that between January and June the index has gone from 100.0 to 108.3. In other words, the cost of purchased parts and materials has advanced 8.3% during this period.

By subtracting the January cost of \$16.840 from the June cost of \$18.230, we learn that the cost of the items in the index has increased by \$1.39 during the six months. Now let's assume that the parts in our sample index represent exactly 90% of the total dollar value of purchased parts in the product. That means that the total value during the base period was \$16.840/.90 or \$18.711. Since we have carefully selected our sample, we can conclude that during the six months total purchased costs have advanced to \$20.264 (108.3% of \$18.711). This estimate is more than 99% accurate.

Since our figures are based on prices being paid in the latter part of June and we carry better than a 30 day inventory, we can advise management to expect direct material costs of \$20.264 during August. Under normal accounting routine, management would not know this until sometime in September.

Measuring Performance

With total purchased costs up more than 8% in a six month period, it looks as though purchasing has done a rather poor job in keeping costs down. The fact is, our index has not yet been adjusted for factors outside the control of purchasing.

You note that, in April, major engineering changes were made on parts 102 and 103. They increased product cost by \$2.315. Thus, from April on, purchasing was really buying a different product. Consequently, such changes should be compensated for when measuring economic performance. Their costs have no relation to the over-all price level, though they naturally affect the over-all cost of the product.

To show why, let's assume: 1) there were no price changes on the parts in our index and 2) that engineering discovered in June that we could get along with but one unit of part 105 in our product instead of two units. This

would reduce purchased costs by \$1.75. So without a single price change, we will have reduced purchased costs from \$16.840 to \$15.090. It certainly could never be implied that this big cost reduction had anything to do with purchasing's efforts in the market. In fact, purchasing had nothing to do with it.

Adjusting for Product Changes

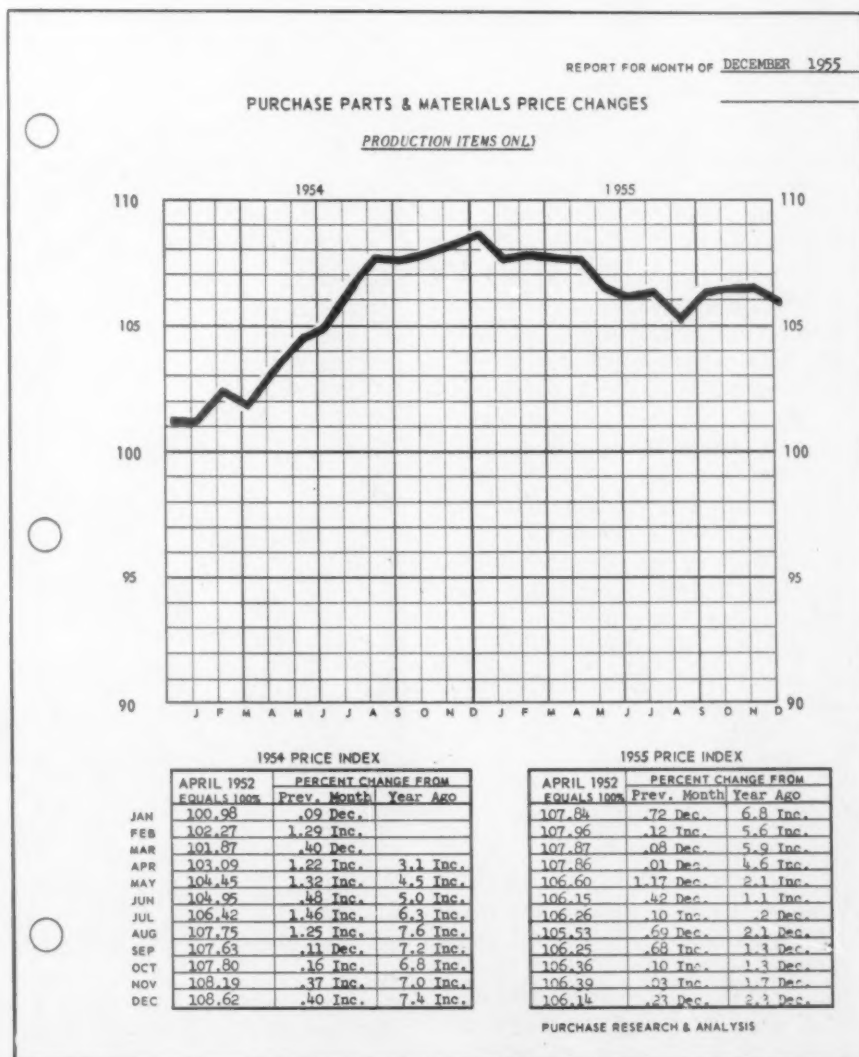
To more truly measure purchasing performance, we must adjust our index for product changes. How you do this is shown in Table II, Computation of Economic Index. You note that the economic index is the same as the product price index until April when the major engineering changes are made. To eliminate their effect on the economic index, we add their cost to our

original base period cost to get an adjusted base period cost. From this point on, our actual product cost is divided by this adjusted base period cost to compute the index.

In our example the difference between the product price index and the economic index is considerable by the end of the six month period. In June, the product price index is 108.3 while the economic index is 95.2. This means that purchasing actually succeeded in reducing the general level of prices paid by 4.8% even though the actual cost of the product increased by 8.3% because of changes.

Make-and-buy decisions require adjustment of both the economic index and the product price index. If it is decided to make an item that was included

(Please turn to page 290)



Get Others to Work With You

COMMUNICATION—

Telling Purchasing's Story

A MAINTENANCE supervisor needed some pipe wrenches. He specified John Doe brand in his requisition. Reason: not because he thought John Doe made the best wrench. It was just the first name that popped into his mind. This particular foreman was afraid purchasing wouldn't get him a good quality product if he didn't specify a brand and stick to it. In this case, he wasted money. Purchasing was tired of arguing with him so it just went ahead and bought exactly what he requested. It could have bought another brand which worked better and cost less. **What's the basic problem here? Answer: Lack of understanding of purchasing by the maintenance supervisor.**

In another company, purchasing got along fine with the people it served in the shop. That is, on the surface at least. Foremen agreed that purchasing should have wide latitude in selecting brands. They had to; it was company policy. They never complained either. If an item wasn't top quality, they just went ahead and used it anyway. They assumed that purchasing, in some

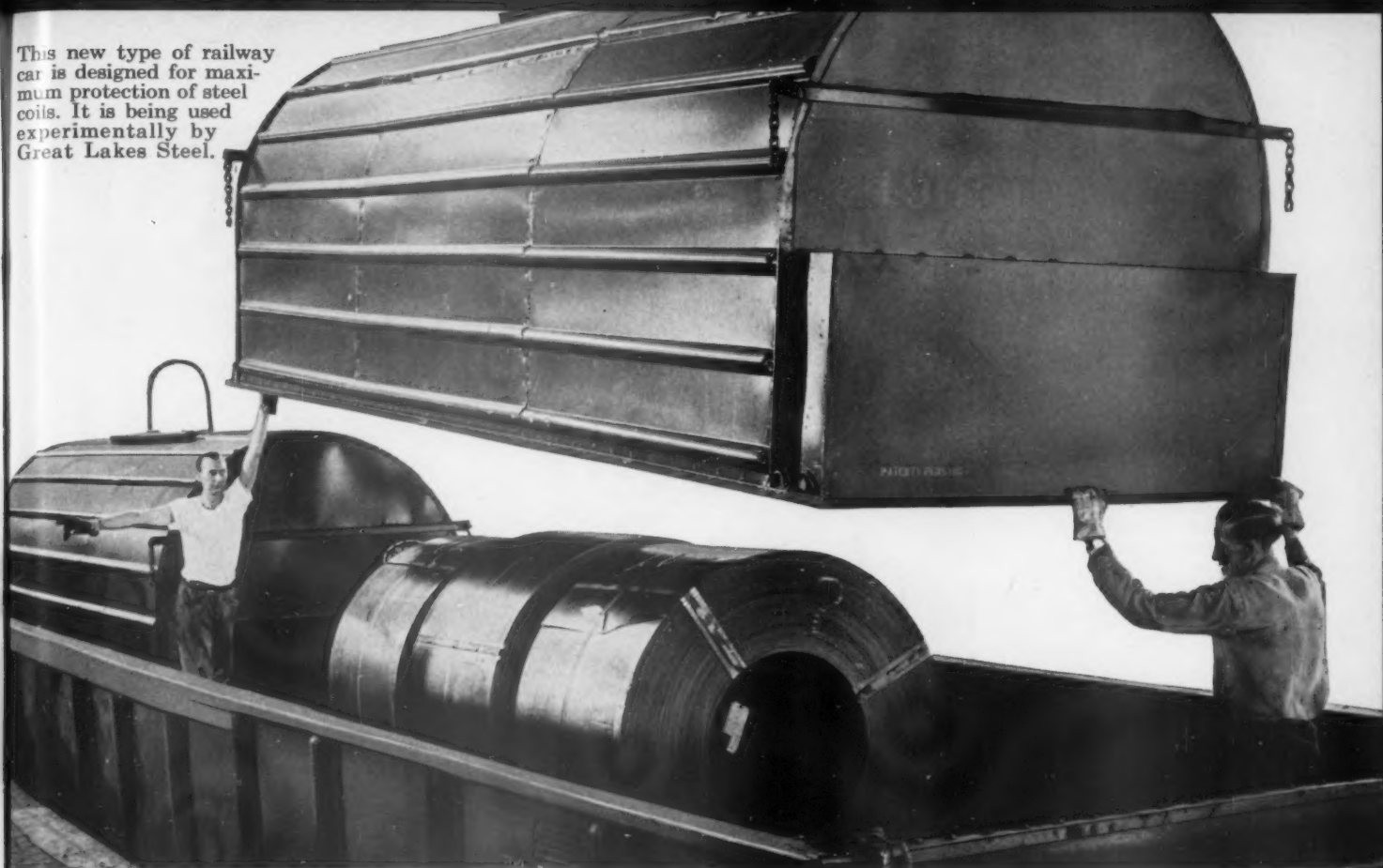


PRESENT YOUR CASE IN PERSON—Pointer in hand, R. A. Kelly, purchasing agent of IBM's Kingston plant goes over purchasing procedures with shop managers enrolled in company's Management Training Program.

For More Information Circle No. 209
on Inquiry Card—Page 17→

PURCHASING

This new type of railway car is designed for maximum protection of steel coils. It is being used experimentally by Great Lakes Steel.



How Great Lakes Steel *delivers* quality



Another order receives individual attention as sheets of steel are wrapped with a waterproof covering and banded to meet the customer's specifications.

Steel coils (below) are securely blocked on a truck and trailer at Great Lakes Steel. Heavy tarpaulin cover is provided by truckers as standard equipment for additional protection.



The emphasis on quality at every stage of production at Great Lakes Steel extends right on through to the Delivery Department. There, careful attention is given to handling and packaging each coil and bundle to make sure that the customer receives his order in prime condition.

The Delivery Department has another important responsibility, too. It must see that our products reach each customer in ample time to meet his production schedules.

For quality with service—that extends all the way from the beginning of our operations to the end of yours—call on Great Lakes for your flat-rolled steel requirements.

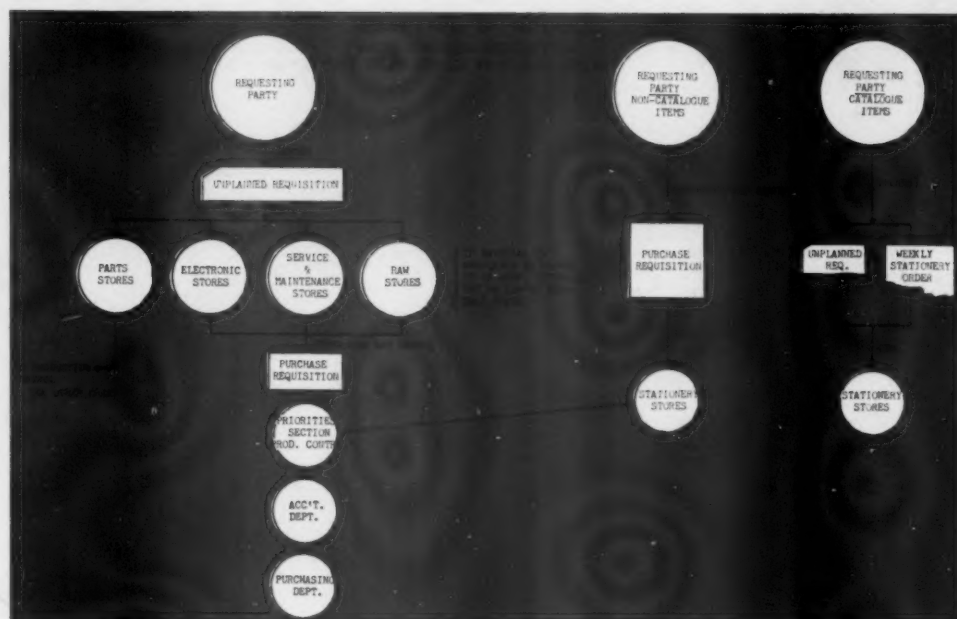
GREAT LAKES STEEL CORPORATION

Ecorse, Detroit 29, Michigan • A Unit of



District Sales Offices: Boston, Chicago, Cincinnati, Cleveland, Grand Rapids, Houston, Indianapolis, Lansing, Los Angeles, New York City, Philadelphia, Pittsburgh, Rochester, St. Louis, San Francisco, Toledo, Toronto.

DESCRIBE THE REQUISITIONING PROCESS— IBM uses visual aids like this flow chart to give supervisors a complete understanding of the requisitioning process. Such parts make it easy to understand the role played by each department.



mysterious way, knew what was best for them. So poor material was accepted that should have been returned—and the buyer knew nothing about it. **Another case of lack of understanding of the purchasing function.**

A manufacturer of sheet metal cabinets used large quantities of abrasives for metal finishing. A vendor proposed a new type abrasive that would cut costs. Engineering tests proved the abrasive was just what the vendor claimed it was. So a large quantity was bought. Workers noticed the change in material and asked the foreman about it. He said, in effect, "the guys in the front office must be getting too cheap to buy good material." The workers feared that management was trying to make them work harder with inferior material. So they refused to even try it. A costly wildcat strike was touched off. **Reason: poor understanding by the foreman of what purchasing was trying to do.**

The Real Problem

Cases like those above sound pretty drastic. Maybe they are the exception rather than the rule in well managed plants. But they do highlight a serious problem — communication. Various departments can only work together if they really un-

derstand what each is trying to accomplish.

In most cases, purchasing probably has a better understanding of other functions than they, in turn, have of purchasing. Reason for this is obvious. In general, purchasing personnel have wider contacts with other areas than people in most other departments. So buyers should have a pretty good picture of what makes the over-all organization tick. But do they? As a test, check members of your department. Do they have a broad knowledge of the problems encountered by accounting, manufacturing, quality control, production control, and engineering? If your own people flunk this test, you can safely assume that those outside purchasing have an even more naive view of the purchasing function. Even if your buyers pass the test with flying colors, other departments might not know as much about purchasing as they should.

How can this problem of communication be licked? One way to do it is to promote frequent contact between buyers. That's one of the reasons why many companies have found it profitable to decentralize their purchasing activity into divisions. In a smaller buying unit, it's a lot easier for purchasing to get on a first name basis with the people it serves.

But this doesn't seem to be the complete answer to the problem. Some companies are too small to have really effective decentralized purchasing. Companies that have decentralized are usually so big that each division is a good-sized business in itself.

One rather limited tool for getting the purchasing story across is the employee newspaper. Naturally, the more people in other departments read about purchasing, the greater will be their familiarity with some of its problems. So it's a good idea to work with the editor of the paper on possible stories. Look for something that has "news" value. This might be some unusual purchase that was made or it could be something about the organization of the department itself. If you can dream up something that you think might have reader interest, don't be bashful about it with the editor. Publicity won't do the whole job of better communication for you but it does help.

How DeLaval Does It

The DeLaval Separator Company was *not* the source of any of the case histories cited at the beginning of this article. Close cooperation with using departments is one of DeLaval's major purchasing policies. It's carried in the day-to-day working relationships between buyers and shop people.



SERVICE...

First with America's railroads

NIBROC® TOWELS... first wet strength towel
and still the finest... Strong the way you like them... yet super-

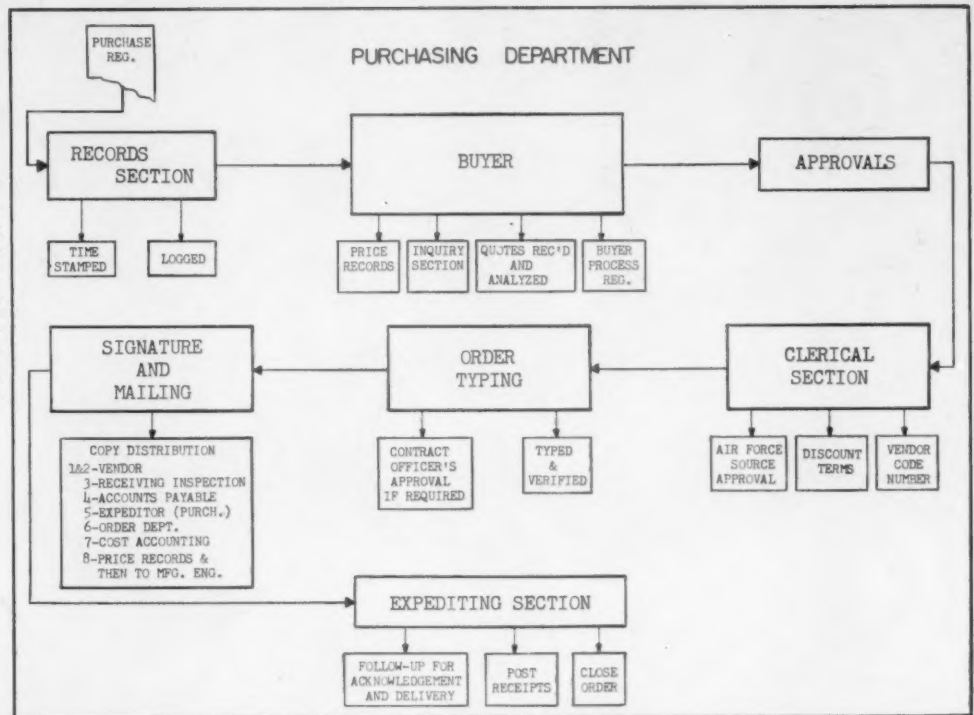
absorbent—sanitary—soft-textured. Nibroc Towels match the dependable service of your railroads, which use more of them than any other paper towel. It's just the same with most industries and many institutions. Buy the finest—Nibroc Towels and Nibroc Sofwite or Softan Toilet Tissues. For name of distributor, see "Nibroc" in your classified directory or write Brown Company, Dept. GN-1, 150 Causeway Street, Boston 14, Mass.



His Royal Nibs

For More Information Circle No. 210 on Inquiry Card—Page 17

DON'T FORGET BUYING PROCEDURES—If requisitioners understand what must be done with their requests after they're received in purchasing, better teamwork will result. IBM uses this flow chart to graphically portray how a requisition becomes a completed purchase order.



Successful as this simple technique is, Purchasing Agent M. H. Dowling believes in going even further.

Like many other companies, the foremen at DeLaval have a club which meets for dinner periodically. Speakers are various company department heads. Purchasing Agent Dowling addressed the group recently. It was an ideal opportunity for him to clear up any misunderstandings foremen might have of the purchasing function. Mr. Dowling emphasized, in his talk, that purchasing was a service function dedicated to supplying the plant with the best possible materials at the lowest cost. He then gave foremen specific pointers on how they can work with purchasing for the common good. He suggested they check to make sure they aren't using specials when stock items will do the same job.

Whenever foremen see vendors, Mr. Dowling recommended that they be courteous but not disclose any confidential information. He pointed out that it's good common sense to give every vendor's product a fair trial. He also told foremen that he would like them to let purchasing know if quality of materials isn't what it should be. Purchasing can't act if it doesn't

have the information. At DeLaval, it gets the information.

How IBM Does It

International Business Machines is one of the most education-minded companies in the country. It is very conscious of the importance of smooth teamwork between departments. This is why the case histories cited at the start of this article could never take place at IBM plants.

IBM believes in training its shop managers in every basic phase of the business. It has a formal Management Training Program. Purchasing isn't neglected in the program. The plant purchasing agent gives members of class a complete picture of how his department operates and what it is trying to accomplish.

Typical of IBM's training programs is one the company recently held at its new Kingston, N. Y. plant. Purchasing Agent R. A. Kelly gave two different lectures to the shop managers. In the first, he covered the policy organization, and responsibilities of the purchasing department. In the second, he discussed the actual purchasing process. He went over the purchasing process in detail—from the point when the re-

quisition is issued to the actual purchase of the material.

After managers finish the IBM course, they know:

1. Purchasing procedures and the part they play in them.
2. What purchasing is and what its goals are.
3. How purchasing can help do a better job.
4. How they can help purchasing do a better job.

IBM naturally supplements its formal training programs with an organizational structure that makes it possible for buyers and personnel in other departments to thoroughly understand each other's problems through day-to-day contact.

What Can You Do?

Not too long ago, N. A. P. A. President Soell said that "purchasing performs an important job always as a member of a team—of a team performing an important job." Thus, to do this job, you've got to get others to work with you. Apply some of the simple ideas on better communication and you'll find yourself doing a better job. It's also a good way to get a scientific purchasing operation going with the full understanding and cooperation of others.

YOUNGSTOWN STEEL ROUNDS

used in manufacture of quality RB&W nuts



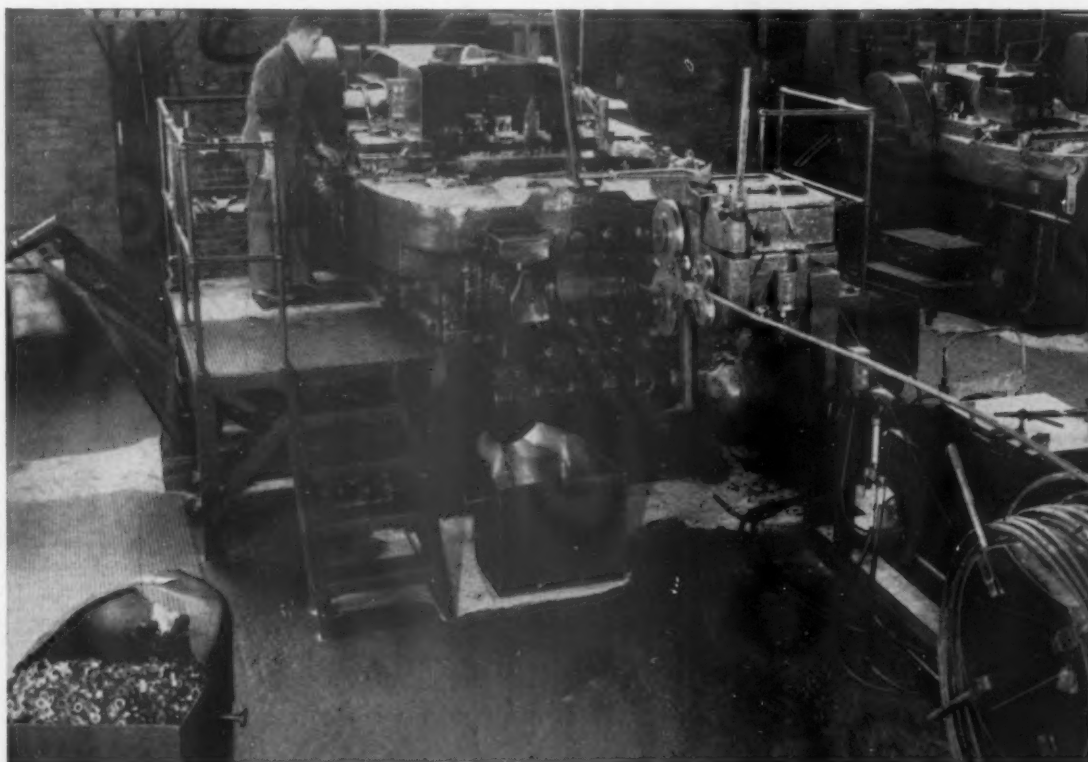
Russell, Burdsall & Ward Bolt and Nut Company pride themselves on the strength of their bolts and nuts. Justifiably, too, because they fabricate tremendous quantities of nuts from Youngstown Scrapless Nut Quality Steel. Not an ordinary steel, each step in making this Youngstown steel, from ore to the finished product, is closely controlled.

That's why, when nut formers punch and pound it, and when threading machines give

it another going over, a nut made of Youngstown Steel comes through a winner. This material is free of injurious seams and also machines cleanly in the threading operation.

When you order Youngstown Scrapless Nut Quality Steel, either in Bar, Rod or Wire form, you can be sure it will be held to the right tolerances. Nothing less than perfection is the Youngstown policy.

The payoff for you will come in the form of your finished product.



Five stages of nut making with Youngstown Scrapless Nut Quality Steel Rounds. Made by Russell, Burdsall & Ward, the end result shows what can be done with quality steel. The production machines are running smoothly at the Russell, Burdsall & Ward plants. Nuts by the millions are produced daily. Some are shown in the container in the foreground.



THE YOUNGSTOWN SHEET AND TUBE COMPANY

Manufacturers of
Carbon, Alloy and Yaloy Steel

General Offices Youngstown, Ohio District Sales Offices in Principal Cities.

SHEETS - STRIP - PLATES - STANDARD PIPE - LINE PIPE - OIL COUNTRY TUBULAR GOODS - CONDUIT AND EMT -
MECHANICAL TUBING - COLD FINISHED BARS - HOT ROLLED BARS - WIRE - HOT ROLLED RODS - COKE
TIN PLATE - ELECTROLYTIC TIN PLATE - BLACK PLATE - RAILROAD TRACK SPIKES - MINE ROOF BOLTS



The personal touch adds to the impressiveness and value of reports. When there's a chance to give oral reports, large graphic displays should be used.

Reports to Management— Purchasing's Voice at Top Levels

IT seems not in the nature of the average purchasing agent to toot his own horn. Constant exposure to the "hard sell" has made him wary of glib claims and impressive figures. He feels, and rightfully so, that overblown reports to management will put him in the same class as the fast talker who really can't deliver.

But management, like a good purchasing agent, wants and is impressed by facts. It *needs* facts—accurate data relating to all important aspects of its organization. Purchasing is a vital, profit making function in any company where it is given a reasonable degree of recognition. It is the clearing house for information and data of great significance to other departments and to top management.

The purchasing agent who approaches his job scientifically, then, should not hesitate about making full reports to management. Actually, if the reports are intelligently prepared, he is helping management first. In the process, of course, he helps himself by letting management know what and how he is doing. But the "selling purchasing" job—if it can be called that—should only arise from the presentation of facts that have value in themselves.

While the amount of reference material on purchasing department reports to management is not extensive, there are a few excellent guides on the subject. Among them are two articles in this magazine "The Purchasing Department Reports to Management" by E. M. Krech, (PURCHASING, November, 1950) and "Write Your Report the Way Management Wants It" by J. F. Gustafson. (PURCHASING, November 1955). Also helpful is the booklet "Improving Purchasing Department Reports to Management" prepared by the Development Committee on Intra-company Activities of the National Committee on Education, National Association of Purchasing Agents (11 Park Place, New York 7, N. Y.)

Meanwhile, the following review of basic factors to consider in writing reports to management will aid you in making preparations to use this important tool for modern buying.

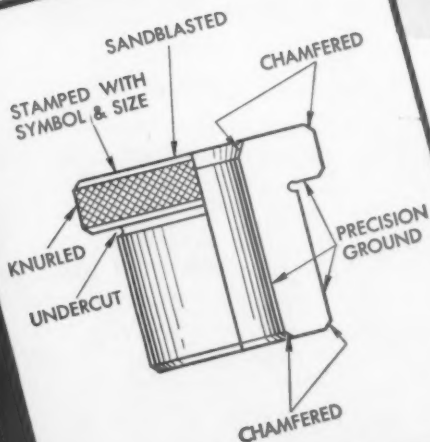
What Kind of Reports—Oral or Written?

The ideal way of presenting a report is in person. You have the advantage of fuller explanations, closer attention, and the chance to answer questions. You can present supporting visual material most effectively. Try to arrange them

Look for These Features
in Drill Bushings

EX-CELL-O
HAS THEM ALL

- ✓ **MATERIAL**—High chrome and carbon oil-hardening steel for maximum wear.
- ✓ **FINISH**—precision ground inside and out, and under the head for perfect bearing.
- ✓ **CONCENTRICITY**—assured by grinding on arbors after the holes are finished.
- ✓ **HARDNESS**—Deep-hardened to 62-64 Rockwell "C" in automatic equipment.
- ✓ **UNIFORMITY**—of material, dimensions, finish, and hardness assure accuracy, long life for both bushings and tools.
- ✓ **PROMPT DELIVERY**—from stocks of standard sizes in Detroit, New York, Los Angeles, and London, Canada.
- ✓ **PREFERRED**—largest bushing users in the country are Ex-Cell-O customers.



Your purchasing and engineering departments should have copies of this Ex-Cell-O Bushing Catalog No. 35936. Just ask for the number of copies you would like.

EX-CELL-O CORPORATION

DETROIT 32, MICHIGAN

MANUFACTURERS OF PRECISION MACHINE TOOLS • GRINDING SPINDLES
CUTTING TOOLS • RAILROAD PINS AND BUSHINGS • DRILL JIG BUSHINGS
AIRCRAFT AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT



At this meeting, valuable comparative data on volume and number of orders, long range raw material supply, purchasing procedures, product price trends, and geographical distribution of suppliers are displayed for quick comprehension.

if you can—but be sure to have written copies on hand for all concerned.

If—as in most cases—your reports must necessarily be only written, be sure they are legibly typed, at least double spaced. Place any artwork (graphs, charts, etc.) as close to the pertinent copy as possible. Repeated references to appendixes make reading the report an awkward job. A simple cover will keep the contents from becoming soiled or damaged.

What Style—Narrative or Straight Figures?

Windy reports tend to tire their readers and raise suspicions about the writers. Use straight figures wherever possible, with footnotes and qualifications kept short and to the point. To highlight significant figures, underline with a blue pencil. Where narrative is unavoidable (e.g., when discussing procedures or training) use short, simple sentences. Try to illustrate your points with examples. Stick to the tangibles—facts, results, conclusions. Try to avoid making claims or forecasts that have nothing to back them up. And stay away from bombastic language.

Is Visual Presentation Effective?

Graphic presentation should be used at every opportunity. In this case, one "picture" is worth a thousand words in condensing, summarizing and comparing information. Take your own department price charts and reproduce them by one of the various duplicating processes, and make them a part of your report. In one purchasing department of average size, graphs are used for reporting data on value of orders, operating costs, cash discounts, and orders placed, in addition to indicating price trends. This technique is particularly effective in showing how current developments stack up against previous performance.

How Often Should Reports Be Made?

Unless company policy says otherwise, it's a good idea to make reports at least quarterly. This keeps management fairly up to date on vital purchasing information without flooding them with paper. The final, or annual, report will, of course, be more extensive than the three preceding it. Reports given at 6 or 12 month intervals tend to be recitations of ancient history, rather than pictures of current purchasing operations.

What Should A Report Cover?

Try to stick to those areas that (a) reflect the essential work and progress of your department, and (b) help guide management in making decisions on commitments, expansion, operating policies, etc. These ten items—flexibly interpreted to meet your own special conditions should be a basic "table of contents" for your report:

1. Dollar volume of purchases, and number of purchase orders
2. Cost of operating your department
3. Cost savings achieved by purchasing (number is as important as dollar volume)
4. List of cost saving projects (both purchasing and inter-departmental) in progress
5. Analysis of cash discounts taken
6. Review of general business conditions
7. Forecasts on raw material supply and price situation (in conjunction with visual presentation of product price index—see page 114)
8. Inventory variation and turnover
9. Waste, scrap and salvage disposal
10. Departmental training and development programs

Who Should Get Copies?

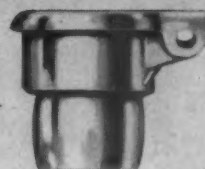
Your immediate superior will naturally get the first copy of your report. Distribution of any further copies is subject to his approval. If this approval is obtained, it is advisable to get your report to as many departmental executives as possible. This may be through an executive committee or operating committee. Such a practice does not necessarily mean that you are responsible to each of these department heads. But it does provide them with information that may help them. And it does help to broaden their understanding of the purchasing function and its potential.

Here's How

GITS

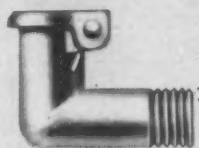
Provides

Low-Cost Replacement Of YOUR Lubricating Devices



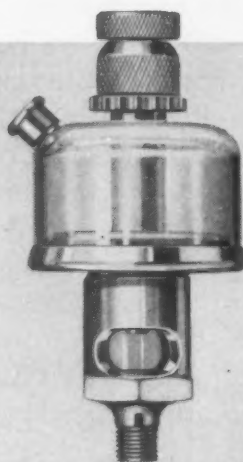
**OIL HOLE
COVERS**

This model is designed to fit into a simple drilled hole. Ideal for use on small motors, generators, starters and light machinery—for dependable oil hole protection at moderate cost. Larger sizes frequently used as filler caps on tanks or reservoirs. Style R—No. 305.



**OIL
CUPS**

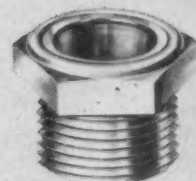
Accurately machined from a solid brass one-piece forging, this oil cup permits safe, dependable application of lubricant at very low cost. Used widely on motors and small machinery requiring side oiling. Style L—No. 1202.



**SIGHT
GRAVITY
FEED
OILERS**

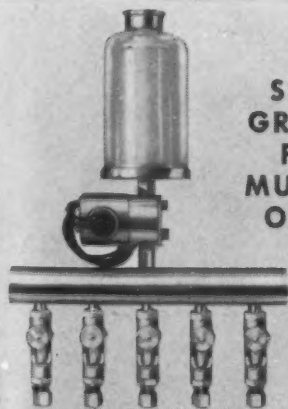
Rate of oil flow regulated by needle valve, directly observed through sight glass in stem.

Shut-off knob does not affect needle valve adjustment. Visible oil supply. Non-breakable. Tops in convenience and dependability, at low cost. Style NFU—No. 3602-A.



**GEAR
CASE
GAUGES**

This oil gauge plug permits instant checking of oil level within a transmission or gear case. For use where construction permits insertion in tapped hole. A valuable addition to any such equipment—at very low cost. Style BW—No. 4042.



**SIGHT
GRAVITY
FEED
MULTIPLE
OILERS**

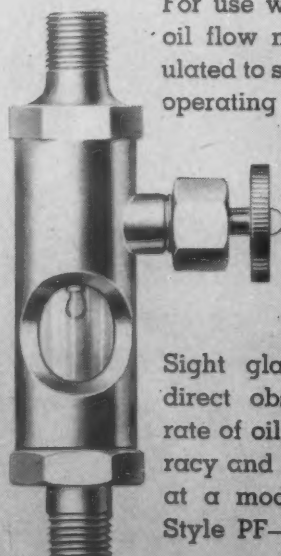
This one unit replaces 3 to 8 individual oilers. Maximum practicality in a small central lubrication system. Positive cut-off during idle periods. Individual vibration-proof needle valve adjustments. With solenoid control (Illustrated): Style MDS—No. 4685-A. Without solenoid: Style MD.

SIGHT GAUGES

For use where rate of oil flow must be regulated to suit changing operating conditions.

Needle valve permits extremely accurate adjustment of oil feed.

Sight glass provides direct observation of rate of oil flow. Accuracy and convenience at a moderate price. Style PF—No. 4290.



Too much machine "down-time"? Too much time wasted in servicing your machinery? Perhaps some old, worn lubricating devices need replacement. Maybe a different, more modern device will do the job more efficiently. Whenever you replace, specify GITS Lubricating Devices—the widest selection available anywhere, right in stock. The items pictured above are only a few of our many thousands of lubricating devices. Send NOW for your free Catalog.

GITS BROS. MFG. CO.

The Standard For Industry For Almost Half A Century

1865-A South Kilbourn Avenue
Chicago 23, Illinois

Clip this page for handy "rough reference"

HY-PRO REVOLUTIONIZES ITS NEW AND EXCLUSIVE

Read how the Tap Specialists have raised the highest standards in the industry still higher

Now, Hy-Pro—the tap specialists and traditional leaders in tap quality—have developed a new and exclusive 3-way quality control. Nowhere else in the industry do you get this assurance of consistent tap perfection. Here are the three steps:

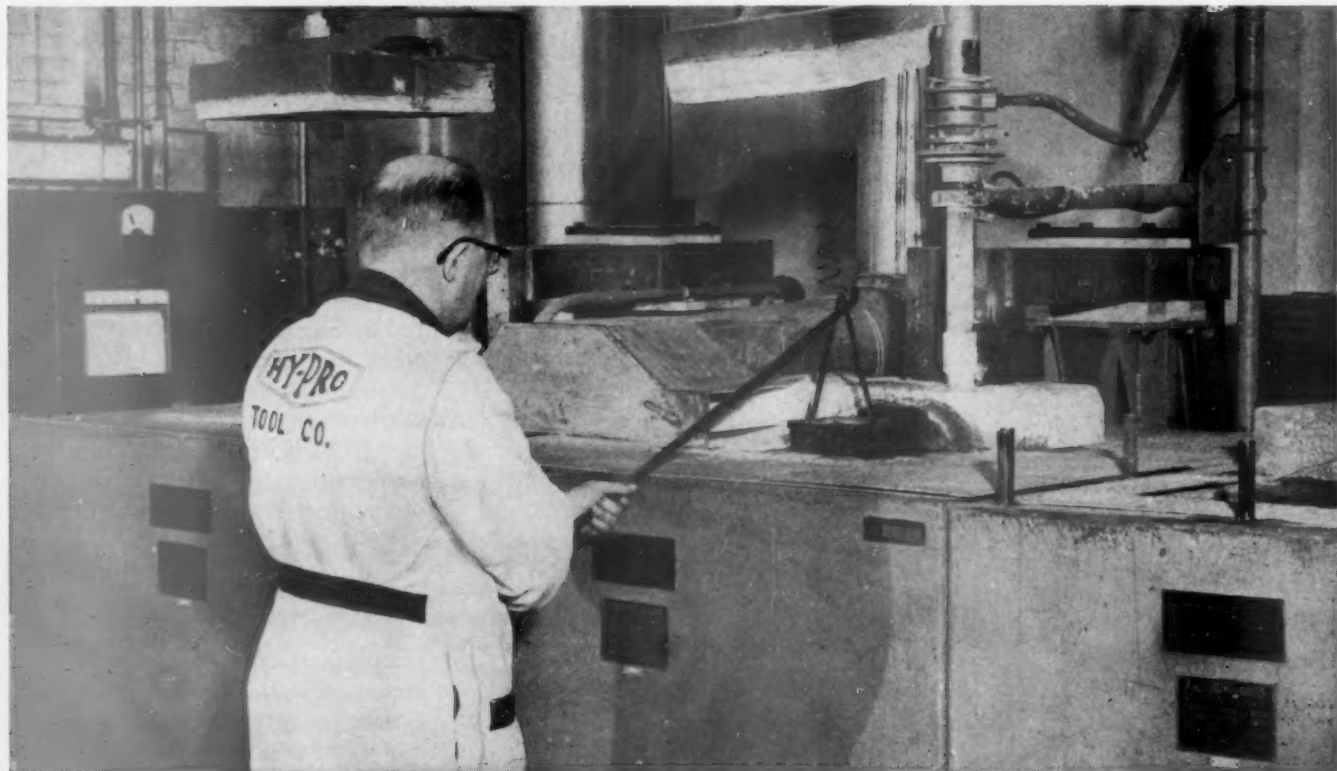
The first is a new Heat-Treating installation, acknowledged to be the industry's latest and most precise. And the result is the hardest, toughest tap which guarantees you unvarying perfection.

The second Hy-Pro marvel is its new Electronic Analyzer. All Hy-Pro taps are now subjected to an electronic analysis. This new equip-

ment examines the structure of a tap without ever touching it. This is why Hy-Pro taps can produce more holes per tap at the lowest cost per tapped hole.

The third instrument of perfection is Hy-Pro's new Micro-Hardness Tester. Here Hy-Pro taps are microscopically examined for metallurgical uniformity on both interior sections and surfaces. Even the extreme cutting edges are carefully checked for hardness to within one-half of one thousandth of an inch to insure that every tap will give proper performance.

And the best part of the Hy-Pro story is that you get the benefit of these new Hy-Pro developments *at no extra cost to you*. Get in touch with your nearest Hy-Pro distributor or call us direct. Hy-Pro quality controlled taps cost no more than ordinary taps.



1. Heat-Treating—Hy-Pro's new heat treating installation—the industry's most advanced equipment—guarantees you the hardest, toughest taps yet achieved with unvarying perfection.

For More Information Circle No. 213

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PURCHASING.

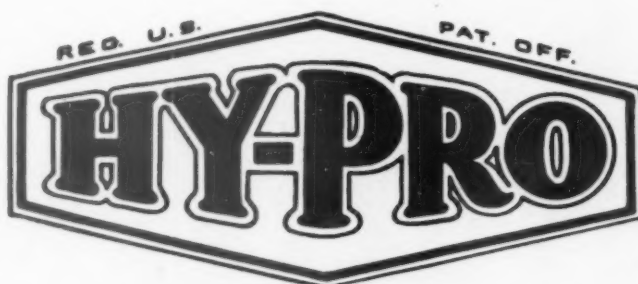
TAP PRODUCTION WITH 3-WAY QUALITY CONTROL



2. Electronic Analyzer—When a Hy-Pro tap is put in this machine, its structure must conform to the most rigid Hy-Pro standards — or it is electronically rejected. All Hy-Pro taps are subjected to electronic analysis.



3. Micro-Hardness Tester—Hy-Pro taps undergo the only known microscopic examinations of metallurgical structure on both interior sections and top surfaces. Even the extreme cutting edges are checked to within one-half of one thousandth of an inch.



"The Tap Specialists"

New Bedford, Massachusetts, U.S.A.

ADDITIONAL WAREHOUSES:

10428 W. McNICHOLS RD.
DETROIT 21, MICH.
UNIVERSITY 4-1077

11232 LAWLER ST. (WORTH)
CHICAGO, ILL.
GARDEN 4-0217

109 EDISON PL.
NEWARK 5, N. J.
MARKET 2-4318

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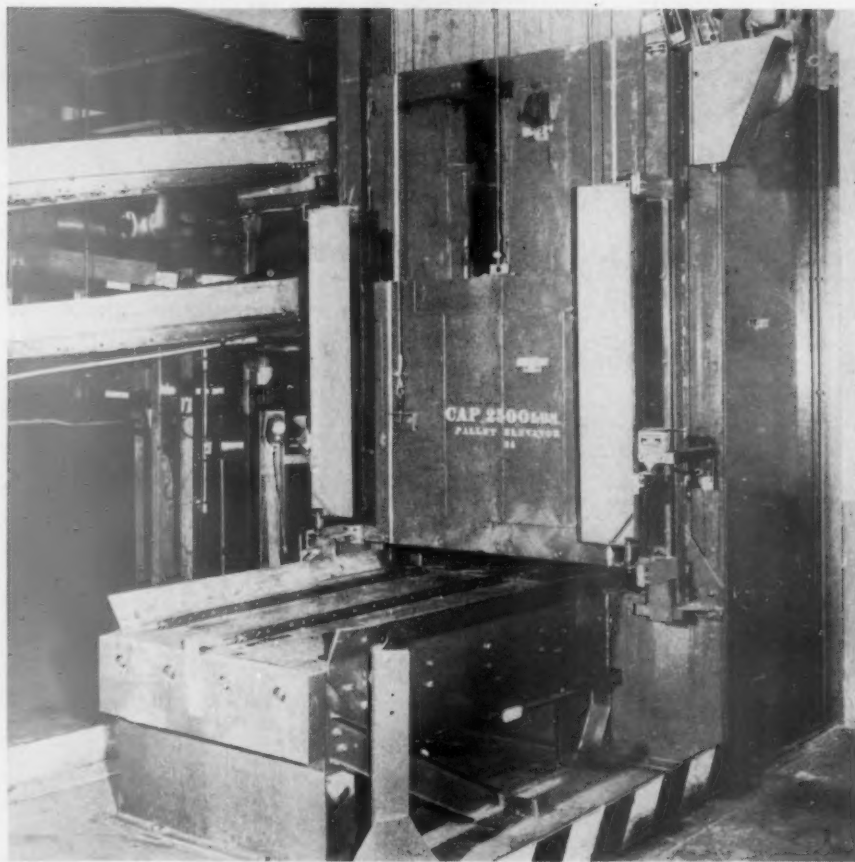
ideas

you can use

Automatic Conveyor System Cuts Manpower Needs 50%

A fully automatic conveyor system at one of the nation's leading breweries solved a serious floor-to-floor materials handling problem and tripled the speed of pallet conveying. The combination

vertical and floor conveyor system moves palletized loads of beer cases along a floor conveyor, into the car or gig, conveys the load vertically from floor to floor, levels the gig, and delivers onto a



Floor conveyor and gig door on lower level of the automatic conveyor system. Positioning of pallet breaks beam which actuates door opening.

second floor conveyor. A total of 27 separate interlocking operations in 1½ minutes.

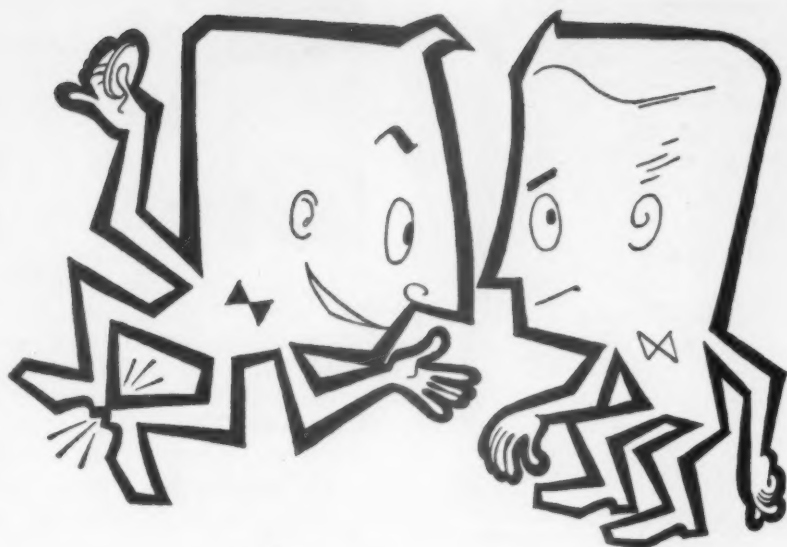
Its speed is three times that of the system formerly used. It cuts manpower requirements in half. In addition, interlocking features of every step insure complete safety of the entire operation.

The company's basic problem was to achieve fully automatic floor-to-floor transfer of full pallet loads at certain weights and certain capacities. Pallet loads, sometimes almost 6 ft. high and weighing up to 2,350 lb. could only be moved between first and second floor storage areas by a fork truck travelling in a freight elevator. This was slow. Loads frequently backlogged at transfer points in the storage areas.

The new system, manufactured and installed by Gifford-Wood Co., Hudson, N.Y., consists of: 1) a vertical pallet conveyor that has a newly-designed leveling device to insure smooth transfer of pallet loads between vertical and floor conveyors; 2) twin 5½ ft. chain conveyors on each floor for moving pallets into and out of the gig; and 3) necessary safety and control devices. It has cut handling time so effectively that two fork truck operators must now work at top speed to keep up with the conveyor.

How The System Improved Conveying

1. Conveying Speed—With the old system, in which a fork truck operator drove his loaded truck into a freight elevator, rode up with the load, then drove off, and discharged the loaded pallet, it took approximately 15 min. to
(Please turn to page 134)



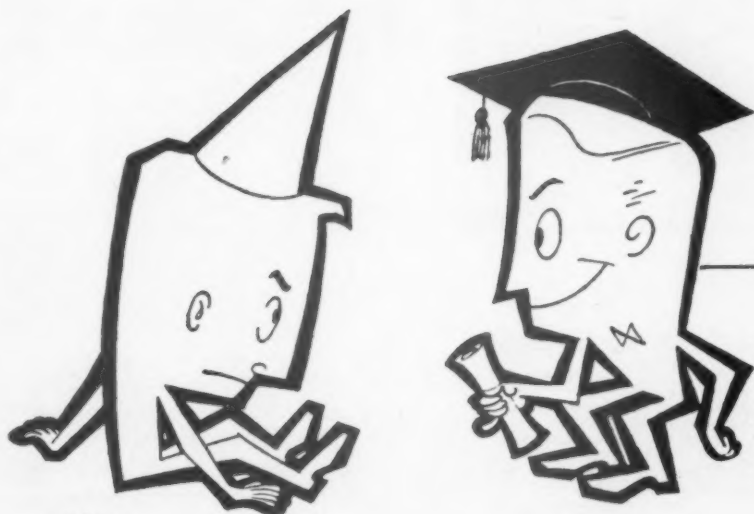
Look! I can buy coal for much less a ton than you're paying.

I used to buy that coal too, but it costs more per million BTU's with a whole lot more in hidden costs.



What do you mean by "hidden costs"?

That coal you're talking about is high in ash. So we were buying ashes at the coal price, paying freight on them from the mine, then paying to have them hauled away. Your "cheaper" coal clinkers; it smokes; it fouls the tubes. That means higher labor costs and higher maintenance. Now I pay more per ton and save thousands of dollars a year.



Coals produced on the C&O are tops in quality.

A C&O combustion engineer showed me why this grade of coal would work best in our type of installation and our experience has shown he was right. You'd better get some expert advice. It can save you money, too.



There's a lot more to buying coal than the cost per ton. Why not contact coal producers on the C&O to solve your particular fuel requirements, or write to: R. C. Riedinger, General Coal Traffic Manager, Chesapeake and Ohio Railway Company, Terminal Tower, Cleveland 1, Ohio.

Chesapeake and Ohio Railway

WORLD'S LARGEST CARRIER



OF BITUMINOUS COAL

For More Information Circle No. 215 on Inquiry Card—Page 17

"Buffalo"

FAN-O-GRAM

ON LOW COST VENTILATION

FIRMS BY THE THOUSANDS BUYING VENTILATION THEY ONCE THOUGHT TOO COSTLY. THE ANSWER IS THE NEW, COMPLETE LINE OF BUFFALO PACKAGE PROPELLER FANS, NOW DOING BIG JOBS AS WELL AS SMALL. URGENTLY SUGGEST YOU REQUEST BULLETIN FM-315 AND SEE HOW WELL THESE FANS ARE PERFORMING ON A VARIETY OF JOBS THAT WILL SURPRISE YOU.

BUFFALO FORGE COMPANY

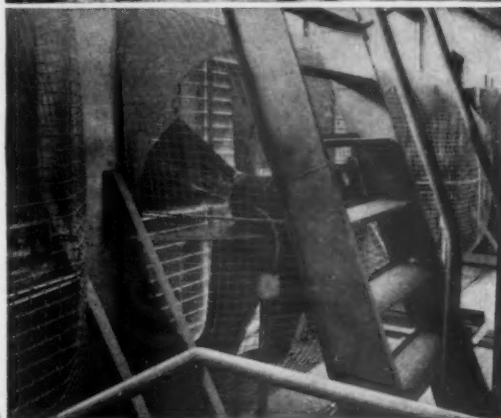
BELT-AIR FANS HELP RAISE 20,000 CHICKS!

Farms as well as industry and commerce are getting quiet, efficient service from "Buffalo" Belt-Air Fans. A battery of 24" units keep the air fresh in this big poultry house. Belt-Air sizes range from 24" to 120" for 5,000 to 250,000 cfm air delivery. Here's a size range to handle most ventilating and exhaust jobs up to 1/2" static!



THESE BELT-AIRS VENTILATE A LARGE COLISEUM!

Here's one bank of 72" units exhausting 770,000 cfm from a Coliseum in the south. Another big installation is handling 1,439,000 cfm! Efficiencies are running very high, even where static pressures are involved.



IT'S JUST THE BEGINNING!

We're constantly developing special models to meet new demands — power roof ventilators — corrosion-resistant, non-sparking and/or high temperature units. Are you taking full advantage of the possibilities? Why not write for Bulletin FM-315 today and look over this increasingly popular line!



BUFFALO FORGE COMPANY

143 MORTIMER ST. BUFFALO, N. Y.

PUBLISHERS OF "FAN ENGINEERING" HANDBOOK

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

Sales Representatives in all Principal Cities

INDUSTRIAL EXHAUSTERS BELTED VENT SETS PROPELLER FANS "E" BLOWERS-EXHAUSTERS

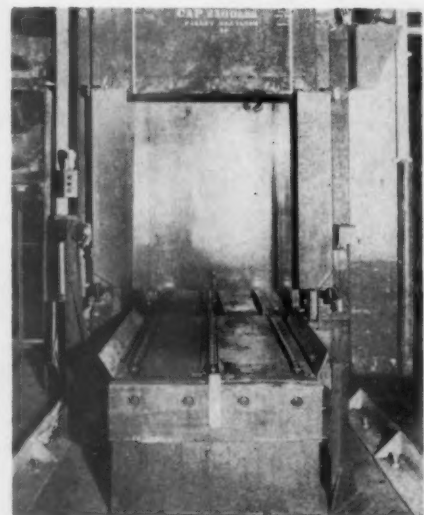
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ideas

(Continued from page 132)

move four loaded pallets from floor to floor. In addition, the operator had to make each return trip without a load.

The new G-W system moves four loaded pallets in only 6 min. And it eliminates any empty trips for the truck. Handling time is up from 112 pallet loads per day to 280. Annual rate of transfer has been tripled, from 25,000 to 75,000 pallets conveyed per year.



Over-size pallet detectors beside gig doors insure correct positioning of pallet into jig.

2. Manpower—With the old system, the brewery figures it took one man 7½ min. to transfer one pallet of beer cases to another floor. Under the new system, one man can now do the same job in 3 min.

3. Maintenance — Maintenance problems on the automatic conveyor system are negligible. Outside of standard lubrication maintenance, only a periodic inspection of cables by company engineers is necessary.

How The Conveyors Work

The Gig: The gig or car of the vertical pallet conveyor, weighing around 1,100 lb., travels a distance of 14 ft. between floors. Its

(Please turn to page 136)

For More Information Circle No. 217 on Inquiry Card—Page 17→

PURCHASING



**Yes,
That's a
Twist
Drill**

A few minutes ago it was a bar of high speed steel equal to that used in any drill to be found. Now this steel is being *further* refined and toughened by hammer forging, the process universally used by the makers of high quality tool steels.

All GTD-AMPCO drills over 1" are hammer forged before twisting. And the flutes are polished, too!

AMPCO TWIST DRILL DIVISION

GREENFIELD TAP and DIE CORPORATION
Greenfield, Massachusetts

CM HOISTS

**VERSATILE
TOOLS**
that belong in every
efficient plant

CM CYCLONE

**Light Weight—Heavy Duty
High Speed Chain Hoist**
Capacities from $\frac{1}{4}$ to 10 tons

Made of tough aluminum alloy. Carries with ease. 1 ton model weighs only 36 pounds. 42% fewer parts. Requires little maintenance. Sealed-in lifetime lubrication. 96% efficient. Equipped with CM-Alloy flexible welded load chain. The best there is in hand hoists... yet reasonably priced.

CM PULLER

**Lifts or Pulls
At Any Angle**
 $\frac{1}{4}$, $1\frac{1}{2}$, 3 and 6 ton capacities

For lifting, pulling, skidding, stretching, straightening. Use at any angle. Eliminates dangerous makeshift methods. Automatic brake. $\frac{1}{4}$ ton model weighs only 13 pounds. CM-Alloy flexible welded load chain. Time savings quickly repay low initial cost.

● **ALSO** Meteor Wire Rope Electric Hoists ($\frac{1}{2}$ to 5 tons), Comet Electric Chain Hoists ($\frac{1}{2}$ to 2 tons), CM Trolleys and CM Cranes.

CALL THE CM DISTRIBUTOR FOR CATALOGS,
PRICES AND QUICK DELIVERY FROM STOCK.



CHISHOLM-MOORE HOIST DIVISION

COLUMBUS McKINNON CHAIN CORPORATION

TONAWANDA, NEW YORK

REGIONAL OFFICES: NEW YORK, CHICAGO, CLEVELAND

In Canada: McKINNON COLUMBUS CHAIN LIMITED, ST. CATHARINES, ONTARIO

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ideas

(Continued from page 134)

cable, a 6 x 37 wire rope, is dead-ended on a 14-in. diameter hoist drum. The gig's counterweight in the conveyor shaft weighs approximately 40% of total gig and load weight, or about 1,440 lb.

Twin - construction fireproof safety doors are at the first and second floor gig entrances of the conveyor shaft.

The floor of the gig itself has a chain conveyor, similar to the floor conveyors, which moves the pallet into the center of the gig after it leaves the floor conveyor, and then moves it out of the gig onto the other floor conveyor after its trip from floor to floor.

Accurate leveling of the gig with the floor conveyors and smooth pallet transfer are essential. To achieve this, G-W designed a new improved electronically-controlled leveling device activated by a single limit switch.

Floor Conveyors—The two floor conveyors, one located in front of the gig doors on each floor, are each 66 in. long and 34 $\frac{3}{4}$ in. wide. Each has three extended pitch roller chains with safety plates between. They are powered by a $\frac{3}{4}$ -hp. 45-rpm. gear motor.

The brewery specifically requested chain conveyors, rather than the roller type, in order to provide maximum stability for 6-ft. high pallet loads. It was also felt that loose pallet slats might damage a roller conveyor, or nails might get stuck between rollers.

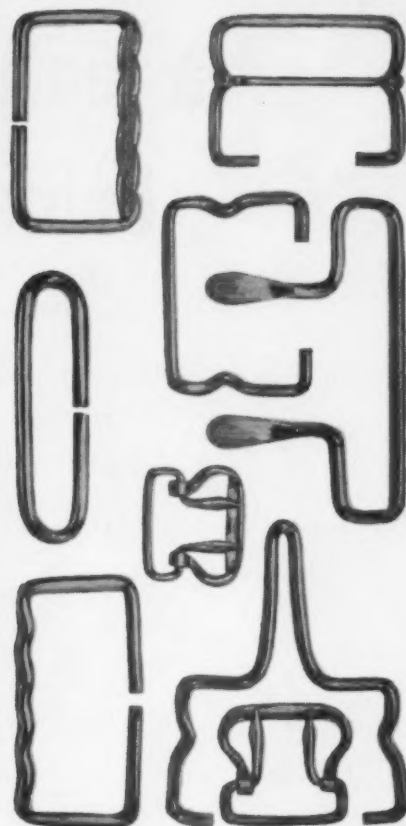
Transfer In 1 $\frac{1}{2}$ Minutes

Let's follow a pallet load of beer cases through a typical conveying operation from the first to the second floor. The first step is for the fork truck operator to position a pallet on the first floor conveyor. Once this is done, the entire cycle is automatic.

When the fork truck operator lifts the pallet onto the floor con-

(Please turn to page 140)

Anaconda Wire now available in New Pay-off Container



Shutdowns to change coils in wire forming machines cut 90% at West Haven Buckle Company

The West Haven Buckle Company of West Haven, Conn., used to be limited to relatively light coils of brass wire because of the slide feed necessary for free pay-off into its wire forming machines. Machines could operate less than an hour before shutdown to feed in another coil.

When they started using Anaconda Wire packaged in the *new pay-off barrel*, which provides free pay-off, the runs were increased 10 times. The big coils of brass wire—400 to 500 pounds—made possible continuous runs of from 8 to 9 hours. This cut the time lost in changing coils 90 per cent. It eliminated the labor of shifting and lifting heavy coils—as the wire is fed directly from the barrel.

An easy way to increase production, cut costs: Big coils of Anaconda Wire in the *new pay-off barrel* give you these advantages:

1. Reduced down-time to change coils can mean production increases up to 25 per cent. Free pay-off feature may enable you to increase machine speed for still greater production.
2. Operators are freed for other duties during the longer continuous runs.
3. Easier handling, better inventory control. Barrels are clearly marked for quick identification—are easily handled by standard hand trucks—utilize storage space efficiently—can be stacked. Losses are minimized because coils stay clean indefinitely—there is no danger of coils becoming tangled or mixed.

No extra charge for Anaconda Wire in the new pay-off container. Call your American Brass Company representative today or write: The American Brass Company, Waterbury 20, Conn.

BUCKLES AND BUCKLE PARTS made by West Haven Buckle Co., West Haven, Conn., using Anaconda 70-30 yellow brass wire. Finished buckles, later nickel plated, are of highest quality, noncorroding, for use in surgical bandages, trusses, corsets and other surgical appliances.



THE NEW CONTAINER which provides Anaconda Wire in 400 to 500 pound coils, ready for free pay-off into pin machines and other automatic forming machinery. Anaconda wire in all alloys is available packaged this way for long, continuous runs—in all gages up to .090", in tempers at least one number hard.

ANA CONDA®

COPPER AND COPPER ALLOY WIRE

For More Information Circle No. 219 on Inquiry Card—Page 17

JANUARY, 1956

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Up to 40% higher tightening torques — a feature of new High-Torque Unbrako socket set screws

RECOMMENDED SOCKET SET SCREW TIGHTENING TORQUES (Inch-Pounds)

SCREW SIZE	UNBRAKO	SET SCREW B	SET SCREW C	MINIMUM DIFFERENTIAL %
#4	5	3.9	3.5	28
#5	9	7.8	7.4	15
#6	9	7.8	7.4	15
#8	20	14.7	14.5	36
#10	33	26.5	25	25
1/4	87	62	60	40
5/16	165	122	125	32
3/8	290	198	225	29
7/16	430	309	350	23
1/2	620	460	500	24
5/8	1225	1106	1060	11
3/4	2125	1540	1800	18
7/8	5000	3660	4600	9
1	7000	5025	6500	8

Compare UNBRAKO-recommended tightening torques with those of ordinary socket set screws and you readily see why you can set an UNBRAKO and then forget it. The reasons are simple. UNBRAKOS have deeper sockets, which give you better purchase with the wrench; rounded socket corners, which eliminate the sharp corners where cracks start; fully formed threads, which make them stronger; and knurled cup points, which keep them tight.

Let's see just how the development of fully formed threads make the new High-Torque UNBRAKO stronger. The metal is compressed into the closely knit grain structure that you see in the illustration. The grain flow follows the contour of the threads. There are no straight lines along which shear can occur. An UNBRAKO retains its flow lines even when ground down to .010" below root diameter. Conversely, cut or ground threads have straight flow lines—lose thread form at root diameter.

You can't buy a better screw than an UNBRAKO. And you can't get full *high-torque* performance without a "High-Titan" UNBRAKO Hex Key—the high-ductility, precision internal wrenching tool. See your authorized distributor today. Or write STANDARD PRESSED STEEL CO., Jenkintown 31, Pa.

STANDARD PRESSED STEEL CO.

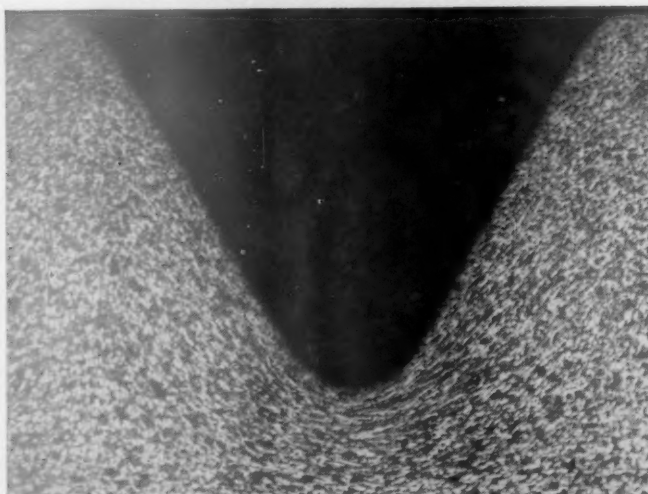


SOCKET SCREW DIVISION

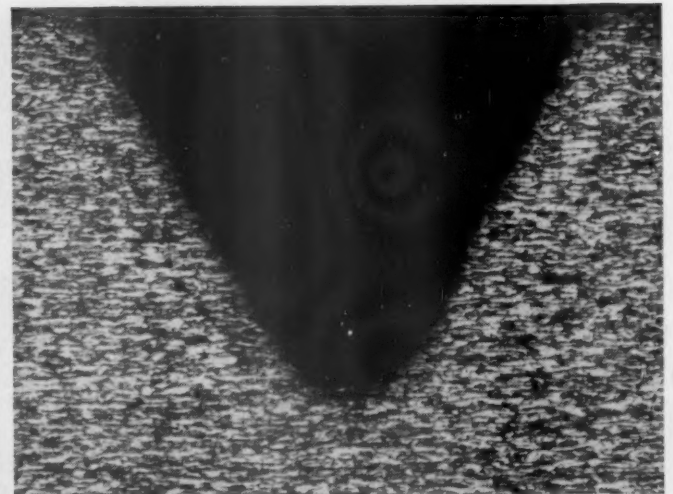


JENKINTOWN PENNSYLVANIA

UNBRAKO SET SCREW THREADS



ORDINARY SET SCREW THREADS



We have just one point
to make—

When it comes to **ELECTROPLATING**
and allied operations, one name
means most to the men who buy . . .

H-VW-M . . . the manufacturer who
supplies every major requirement
in processes, equipment and supplies.

Single source? . . . Yes, and what's
more important—single responsibility.



PLATEMANSHIP is H-VW-M's unique combination of: the most modern and complete laboratory for testing and development . . . the ability to provide complete equipment and supplies for every plating and polishing need . . . the complete background of knowledge and experience in every aspect of plating, polishing, cleaning and anodizing.

H-VW-M

HANSON-VAN WINKLE-MUNNING COMPANY, MATAWAN, NEW JERSEY

PLANTS: MATAWAN, NEW JERSEY • GRAND RAPIDS, MICHIGAN

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DAYTON • DETROIT • GRAND RAPIDS • LOS ANGELES • LOUISVILLE • MATAWAN • MILWAUKEE • NEW YORK
PHILADELPHIA • PITTSBURGH • PLAINFIELD (N. J.) • ROCHESTER • ST LOUIS • SAN FRANCISCO • SPRINGFIELD (MASS.)
UTICA • WALLINGFORD (CONN.)

INDUSTRY'S WORKSHOP FOR THE FINEST IN PLATING AND POLISHING PROCESSES • EQUIPMENT • SUPPLIES

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JANUARY, 1956

3809

139



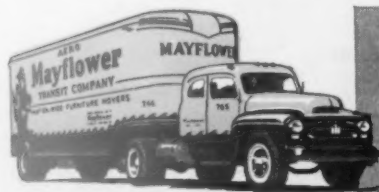
Prescriptions for Prized Possessions

WHEN YOU MOVE THE MAYFLOWER WAY

► Every long-distance move is different . . . different in people and destination, in household goods to be moved. This means that long-distance moving service needs to be "tailored" to fit each family's particular needs. Aero Mayflower has not only produced a service that is tops in quality everytime, everywhere, but takes care of the individual requirements of each household. This is because Mayflower's broad experience has made it possible to provide all the facilities that might be needed for *any* move, and to *standardize* them on the highest quality for *each* move. Your nearby Mayflower agent will be glad to arrange "customized" service for all your company's personnel, wherever they may be, wherever they may be going.

AERO MAYFLOWER TRANSIT CO., INC. • INDIANAPOLIS

Mayflower Service is available through selected warehouse agents throughout the United States and Canada. Your local Mayflower agent is listed under Moving in the classified section of your telephone directory.



America's Finest Long-Distance Moving Service

For More Information Circle No. 222 on Inquiry Card—Page 17

ideas

(Continued from page 136)

veyor, the loaded pallet breaks the beam of a photoelectric eye. After only 4 sec., in which time the operator positions the pallet on the conveyor, a relay causes the gig door to open.

In opening, the door strikes a switch which starts the floor conveyor motor. The chain conveyor moves the pallet toward the gig at a speed of 30 ft. per min. A contact on the floor conveyor actuates the conveyor inside the gig, which moves the pallet into the car.

As it moves into the gig, the pallet trips a limit switch which stops the floor conveyor and closes the gig door. The gig will not move until the interlocking doors are completely closed. When the door closes, it actuates a switch that starts the hoist motor.

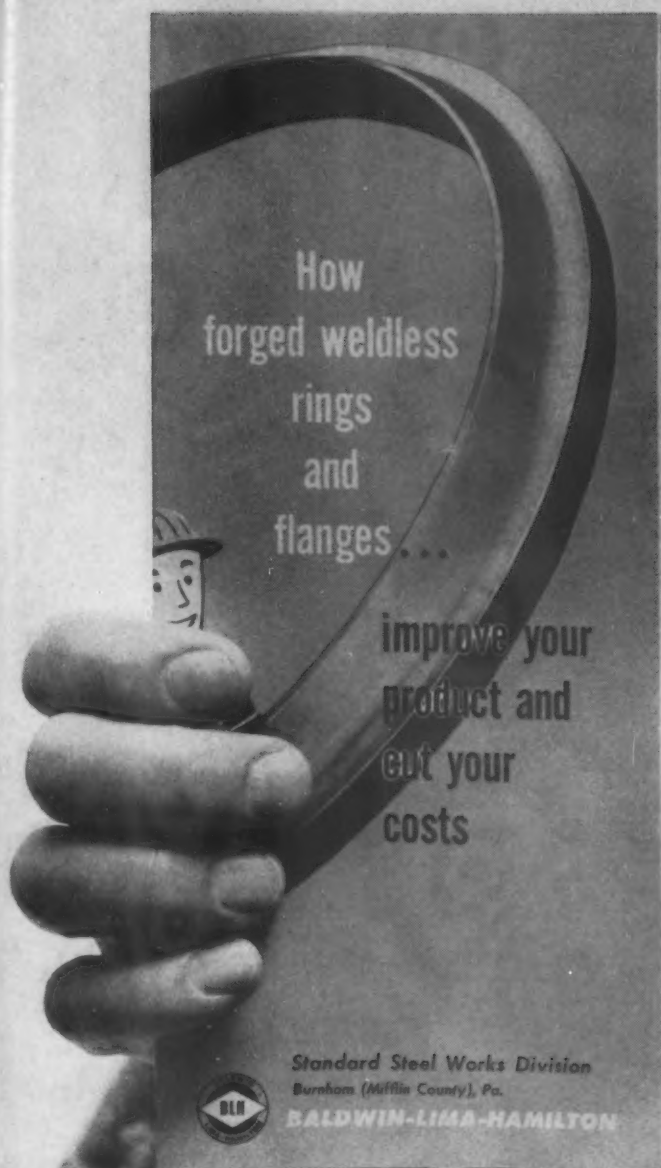
The gig moves vertically at a speed of 50 fpm, until it is within 2 in. of its final resting place, when the special leveling device takes over.

Cams on the gig trip a limit switch in the conveyor shaft, which cuts off the hoist motor and actuates the 3 hp. motor of the leveling screw. The leveling screw then levels the gig at a reduced speed of 5 fpm. When the conveyor in the gig has been leveled with the second floor conveyor, a second switch is tripped which stops the leveling motor and actuates the door-opening mechanism on the second floor.

Transfer of the pallet onto the second floor conveyor is the exact reverse of the operation that moves the pallet into the gig. If a fork truck is not waiting to pick up the delivered pallet, the conveyor will automatically stop when the pallet has been delivered.

**PLEASE USE INQUIRY CARD
PAGE 17**

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on Inquiry Card—Page 17→
PURCHASING



free! this informative booklet on...

"How forged weldless rings and flanges improve your product and cut your costs"



**Standard Steel Works Division
BALDWIN-LIMA-HAMILTON**

When you consider a change in your product, you expect that change to make money for you or to save money for you.

It's quite possible that Standard Steel Forged Weldless Rings and Flanges will do *both*.

They improve your product, thus making your sales task a little easier, and they cut your manufacturing costs. In many cases, first cost may be less than the component you now use, and always machining time is less.

In checking through this detailed booklet, you'll be able to determine in five minutes or less whether they're worth investigating further. Send the coupon now.

Dept. 8736, Standard Steel Works Division
Baldwin-Lima-Hamilton Corporation, Burnham, Pa.

Please send me Bulletin No. 10,000, "How Forged Weldless Rings and Flanges Improve Your Product and Cut Your Costs."

Name _____ Title _____

Company _____

Address _____

City _____ Zone _____ State _____



TEAMWORK of large and small business is responsible for the present prosperity of both. Here, owners Frank, George and Harmon Hugo (left to right) check vital jet engine part with Arnold Armstrong before delivery to General Electric Plant at Evendale, Ohio.



SPECIALLY BUILT OVEN at Portland Copper raises temperatures as high as 2400°—one of many metal treating facilities available at Portland plant.



QUALITY CONTROL has been a major factor in building the firm's reputation. Here, Albert Kozick checks X-ray of special weld for flaws—standard procedure on all jet engine work.



DIVERSITY OF OPERATION—now over 40% non-defense—is typified by new, fabricated aluminum toll booth doors ordered for new Maine Turnpike.

SKILLS LEARNED AS A G-E DEFENSE SUBCONTRACTOR PROVE VALUABLE TO OTHER INDUSTRIES

Portland Copper's success story underlines interdependence of large and small business

The Portland Copper & Tank Works, Inc., like many small businesses, started with virtually nothing but the personal skills of its owner—in this case a coppersmith who had left Russia in 1909 to seek greater opportunities in the United States. Morris Hugo opened a tiny metal-working plant which existed precariously—with a top gross of only \$12,000—until World War II. Then, with ship repair work for the Navy and the U. S. Maritime Commission in 1943, yearly sales abruptly soared to \$250,000.

Defense skills developed. After the war the company moved to larger quarters in South Portland, Maine, and built up its reputation as a fabricator of stainless steel, aluminum, and special high-temperature alloys. General Electric entered the picture in 1949 with an order for afterburners for J47 jet engines.

Big business helps small business. The Maine firm quickly proved its ability in precision manufacture, made prompt deliveries. And G.E., well-satisfied with the work, soon became Portland Copper's largest customer. As one of more than 17,000 G-E subcontractors and suppliers in the past 5 years, the Portland firm has *continued* to expand in other non-defense areas: pulp, paper, textiles, chemical and petroleum industries. It now grosses better than \$5,000,000 annually, reports an employee roster of 423—as compared with 100 in 1949.

Contributes to nation's production. This success story dramatizes once more the interdependence of large and small business—and how such a system operates for the benefit of both. General Electric has gained essential services and jet engine components needed to help build up the nation's defense. Portland has acquired new skills and facilities which now make the firm valuable to other manufacturers in our expanding national economy.

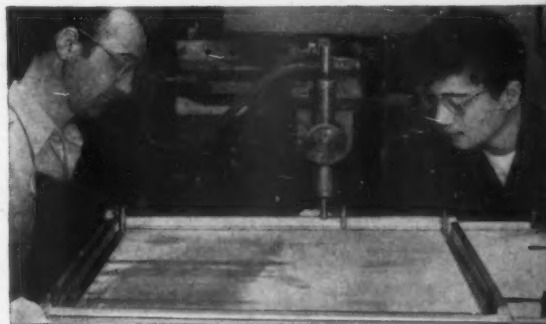
649-5

Progress Is Our Most Important Product

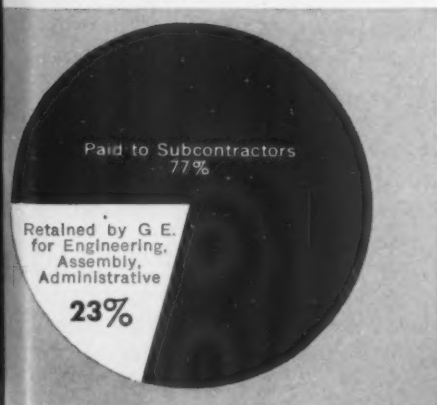
GENERAL  ELECTRIC



INTRICATE FABRICATION is one of more difficult operations Portland performs successfully. Here R. L. Clark checks stainless steel section of a powerful G-E gas turbine.



NEW SKILLS learned as a G-E defense subcontractor are now applied to a variety of jobs for other manufacturers. Typical is this precision welding by Portland Copper and Tank personnel on aluminum panel assembly.



SUBCONTRACTORS who helped G.E. build the J47-GE-25 during the Korean War got 77 cents of every dollar government paid General Electric for engine.

Can Small Business Help You?



Thousands of small businesses, like Portland Copper and Tank, have furnished General Electric with practically every kind of skill and service as defense subcontractors and suppliers.

Many of these companies have available production capacity, created in large part by the reduction of defense orders since the Korean War peak. This means that they may be able to apply their skills to help you with your production.

If you have a manufacturing problem or have work available for subcontracting, please write us on your letterhead stating in as much detail as possible the type of services or skills you require. We will be glad to suggest several small businesses who have done similar work for us and may be able to help you.

Write to C. W. Bryant, Manufacturing Services Division, General Electric Co., 570 Lexington Ave., New York 22, N. Y.

new products

and cost-saving ideas

Continuous Cast Alloys Broaden Cost Reduction Opportunities

Metallurgically superior continuous cast bearing bronze is now available in 44 new, larger stock sizes ranging from 5" to 9" in diameter and a variety of shapes up to 105" long. Responsible for this major advance in foundry technology is the Continuous-Cast Products Dept., American Smelting & Refining Co., Barber, N.J. Previously, these large diameters had been available only as sand, permanent mold, or centrifugal castings.

Until very recently, bronzes produced by the new American Smelting & Refining Company continuous casting process, patented under the name "Asarco," ranged from 7/16" to 5" in diameter. The latter was considered to be the biggest size feasible. Very recently, equipment has been perfected, making possible the casting of much larger diameter rods and tubes, ranging from 5" to 9".

Now, molten metal flows con-

tinuously, day and night, into water cooled graphite dies, where it freezes and emerges cast to size in the form of finished mill lengths as long as 16' and in diameters ranging from 7/16" to 9" with shapes varying from true round to more complex, and ready to use "as cast." Only a minimum of machining is necessary since each ready-to-cut length has already been cast with a profile approximating the shape needed.

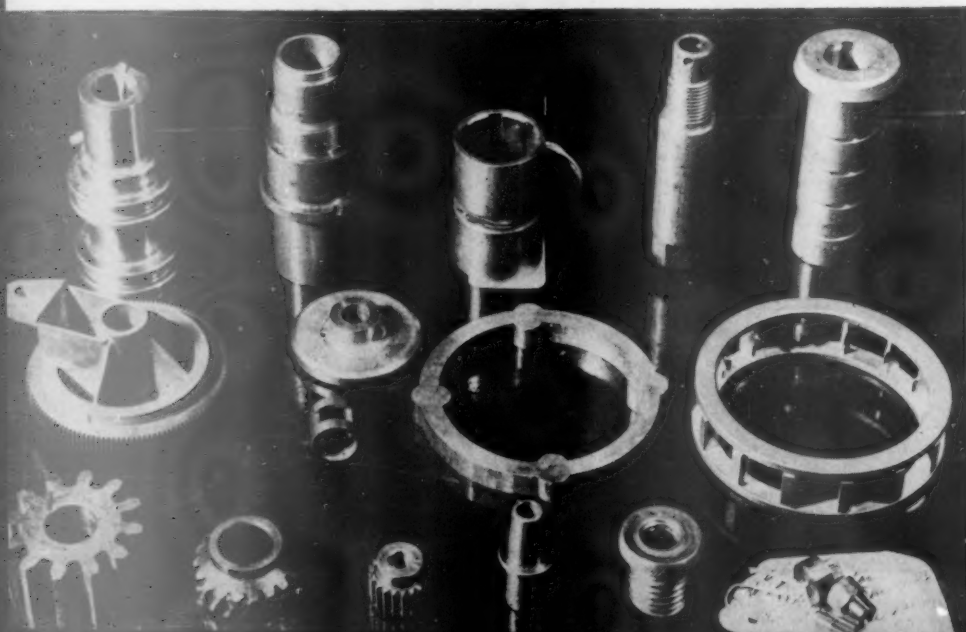
The continuous cast bronze is ideally suited to automatic screw machines—the need for specialized machinery to achieve high production rates from individually rough-cast pieces and the uncertainties in quality, so frequently a problem in foundry products, are eliminated. In this new gravity-fed bottom-flow casting method, the trapping of dirt and dross is prevented. Sand inclusions are, of course, entirely impossible in the continuous cast product. Foreign matter floats on top of the melt in continuous casting without turbulence to carry it into the products. Freezing from the bottom upward permits the escape of any dissolved gases which could cause porosity and there are no blow holes, or hard or soft spots.

By exclusion of impurities such as dirt and dross, and by using a superior rate of chill which greatly improves the uniform dispersion of alloy constituents, the

(Please turn to page 148)

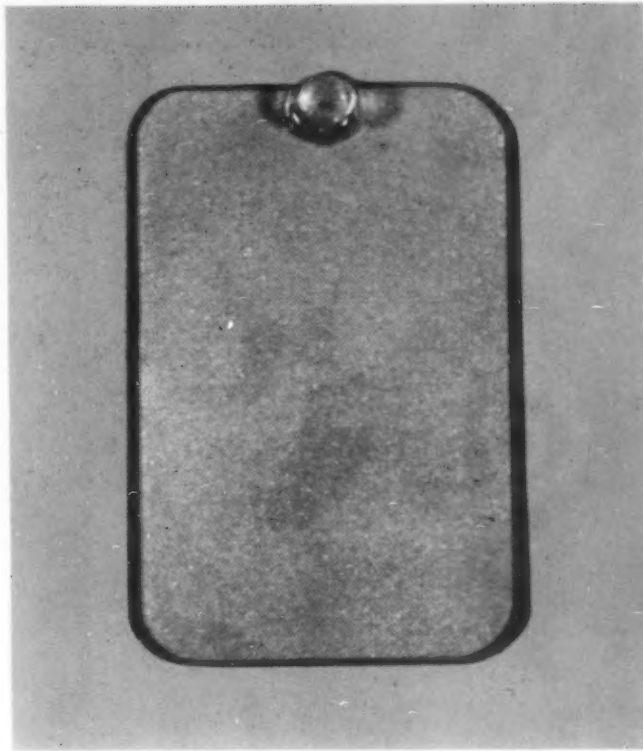
For More Information Circle No. 225
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Continuous casting can produce a wide variety of shapes close to required contours of finished parts. This reduces scrap losses and machining costs.





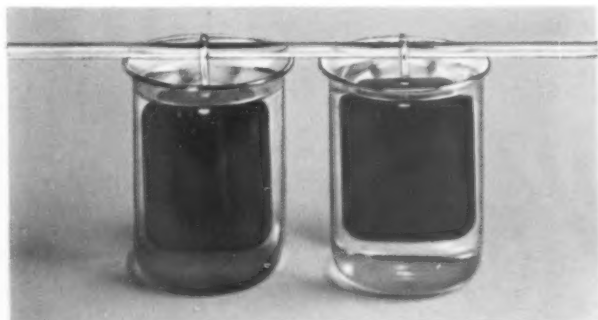
Efficiency of New Sun Rust-Preventive Grease is shown by accelerated test. Rusty test plate (left) was coated with ordinary grease. The large amount of



rust was formed during a 48 hour immersion in synthetic sea water. Plate (right) protected by new Sun rust-preventive grease is wholly rust free after 48 hours.

NEW GREASES PREVENT HARMFUL RUST

**Sun rust-preventive greases give improved lubrication
...protect against wet or humid operating conditions**



In 48 Hour Synthetic Sea Water Test, rust from plate coated with ordinary grease has turned water yellow (left). Water remains crystal clear in beaker with plate protected by new Sun rust-preventive grease (right).

Water contamination in grease-lubricated parts reduces lubricant life, promotes corrosive wear, and may lead to failure of bearing surfaces.

Sun Oil's new rust-preventive greases are specially fortified to overcome this problem. They give extra protection against both direct water contamination and indirect water contamination caused by high humidity and condensation during overnight and week-end shut downs.

Available at the price of ordinary greases, new Sun rust-preventive greases come in many different grades. For complete information, see your Sun representative, or write for Sun Technical Bulletin 38. Address SUN OIL COMPANY, Philadelphia 3, Pa., Dept. GI-1.

INDUSTRIAL PRODUCTS DEPARTMENT
SUN OIL COMPANY
PHILADELPHIA 3, PA.

IN CANADA: SUN OIL COMPANY, LTD., TORONTO & MONTREAL



PLEASE TURN TO NEXT PAGE



New buttery grease now protects against rust under highly adverse moisture conditions.



New tacky grease prevents throw-off...reduces consumption. Highly resistant to water.



New high-temperature grease for anti-friction bearings. Exceptional stability, longer life.

NEW SUN RUST-PREVENTIVE GREASES SAVE YOU MONEY IN 3 WAYS

- Prevent wear... and rust... on 90% of all grease jobs
- • Serve as low-cost rust preventives for storing shop equipment
- • • Save storing and handling special-purpose greases

Sun Oil Company's new greases are fortified to protect against rust. Lubricity is improved and wear is reduced because grease-lubricated parts are now protected at all times against rust and corrosion caused by condensation and process water.

The effective life of these new rust-preventive greases is approximately twice that of conventional greases operating under wet conditions. And, their extra protection against moisture permits their use as a rust-proofing medium for shop storage of tools and parts.

Competitively priced with ordinary greases, these new greases can be applied by any conventional method...brush, swab, pressure gun, or through central pressure systems.

Because of their improved quality, these new Sun greases will now perform 90% of all grease lubrication jobs. You reduce grease inventories...lessen the risk of using the wrong grease...simplify your handling problems.

For complete information, see your Sun representative or write **SUN OIL COMPANY, Philadelphia 3, Pa., Dept. GI-2.**



INDUSTRIAL PRODUCTS DEPARTMENT

SUN OIL COMPANY, PHILADELPHIA 3, PA.

IN CANADA: SUN OIL COMPANY, LTD., TORONTO AND MONTREAL



“Look at the range of sizes of **TORRINGTON NEEDLE BEARINGS**”

The Torrington Needle Bearing is produced in a wide range of sizes—for shaft diameters from $\frac{1}{8}$ " to $7\frac{1}{4}$ "—to meet the needs of the thousands of products throughout industry in which it has become standard equipment.

Whatever the size, the basic design is the same—a full complement of free running rollers, without separators or cages, retained by a thin hardened outer shell which serves as the outer race. This means a greater radial load capacity for its size than any other anti-friction bearing, plus compactness and long,

maintenance-free operation.

Several widths are available in each size to meet specific design requirements, and they are also made with one end closed for use over stub shafts.

The Torrington Company has engineered thousands of different Needle Bearing applications in many industries during the bearing's 20-year history. Our Engineering Department offers the benefits of this experience in applying Needle Bearings to your products.

THE TORRINGTON COMPANY
Torrington, Conn. South Bend 21, Ind.

TORRINGTON NEEDLE BEARINGS *Give you these benefits*

- low coefficient of starting and running friction
- full complement of rollers
- unequalled radial load capacity
- low unit cost
- long service life
- compactness and light weight
- runs directly on hardened shafts
- permits use of larger and stiffer shafts

District Offices and Distributors in Principal Cities of United States and Canada

TORRINGTON BEARINGS



Needle • Spherical Roller • Tapered Roller • Cylindrical Roller • Ball • Needle Rollers

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JANUARY, 1956

ELECTRIC

**Wheels
Engineered
for the
Job**

**WRITE US
FOR
RECOMMEN-
DATIONS**



ELECTRIC WHEEL COMPANY

2804 SPRUCE • QUINCY, ILLINOIS

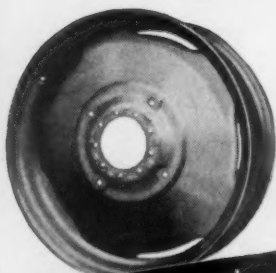
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Rear Tractor Wheel
for Demountable Rim



Planter Press Wheel—
one piece rim with or
without rubber tire



Rear Tractor Wheel
Reversible



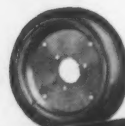
Pick-up Wheel
Crown-face Steel Rim



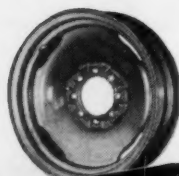
Garden Tractor Wheel
Reversible



Combine Wheel
Reversible



Press and Gage Wheel
Rubber Tire



Spreader Wheel



SAE Implement Wheel
Reversible

**new
products**

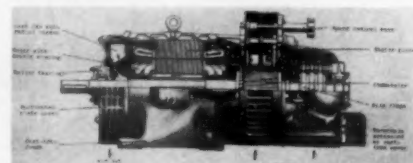
(Continued from page 144)

continuous-casting process raises fatigue characteristics by 33% to 100% over those of the same alloys produced by other casting methods. **Impact strength** is increased 15% to 100% and there are improvements in tensile strength, yield strength and hardness. Moreover, casting tolerances are so close that the finish cutting operations waste a minimum of metal and a minimum of machining time.

The Asarco process is claimed to be the only continuous casting process for copper-base alloys with sufficient versatility to have achieved commercial status. It has proved its efficiency in a long time operation in plants specifically designed for the manufacture of tin bronze alloy products, including the compositions normally employed for bearings, bushings and structural parts.

Circle No. 37 on Inquiry Card—Page 17

Stepless Control Motors



ACEC Electric Corp., 40 E. 49th St., New York 17, N.Y. has introduced an improved line of variable-speed induction motors to meet recently intensified automation trends. Completely self-contained, these motors feature stepless control from zero to 2400 rpm, with torque approximately constant at all speeds. They need no gear boxes, resistors, or other external devices to vary speed. Ratings range from 1/2 hp to 75 hp, for 220 v or 440 v, 60 cycle, 3-phase power supply. These motors keep down manufacturing costs by using standard components, mass-produced for its squirrel cage motors.

Circle No. 38 on Inquiry Card—Page 17

Only
HELLER
makes the
VIXEN[®]

**the original
 and still the best
 milled curved tooth file!**

North American
 Aviation, Inc., Photo

VIXEN files bite deep, cut fast, clear themselves readily and leave a smooth, even finish . . . work efficiently straight ahead or at an angle. Only Heller makes Vixen, both flexible and rigid tang file. They are still the most efficient and versatile metal finishing files.

IDENTIFY VIXEN FLEXIBLE BY THE WHITE ENVELOPE — VIXEN RIGID BY THE WHITE TANG

HELLER TOOL CO.

A Subsidiary of Simonds Saw and Steel Company

NEWCOMERSTOWN, OHIO

BRANCH OFFICES

New York
 Chicago

Detroit
 Los Angeles



YOUR HELLER DISTRIBUTOR CAN SUPPLY ALL YOUR FILE NEEDS

BUSINESS IN MOTION

To our Colleagues in American Business ...

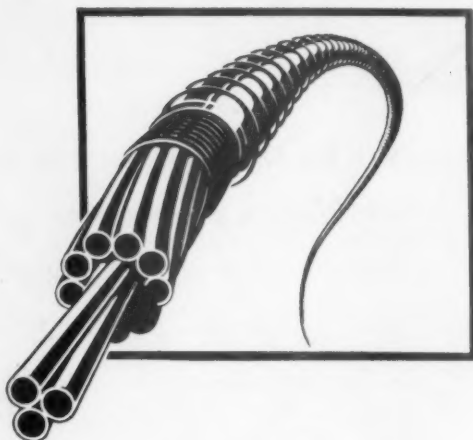
Copper tube is used for hot and cold water lines, radiant panel heating, drainage lines, and to carry fuel or lubricants in automobiles and machine tools. Those are some of the conventional applications. However, during the last few years a new market has developed for this tube. You might like to hear about it. It is in pneumatic or hydraulic recording and control systems. One end of the tube is located at the point where temperature or pressure must be observed, and the other end is connected with a dial, a recording device, or an automatic controller. The tube may be filled with air, an inert gas such as nitrogen, or a fluid. The tube has the great advantage that it carries no electricity, and thus can be installed in places where a spark might cause an explosion, as in a plant handling combustible gases or chemicals.

Originally the idea of using copper tube for this purpose was carried out by running separate lengths of bare tube from the originating points to the panel board. This meant considerable care in installation, and it was also necessary to run the tube where it would not be subject to mechanical damage, or to protect it otherwise. Then a new development appeared: cabled tube. A way was found to put as many as 19 quarter-inch copper tubes in a single armored cable, so that instead of rigging 19 separate runs of tube, just one cable is run, the tubes being fanned out at each end as required. Installation time is cut markedly, and the armor provides self-protection. Cable runs as long as 1,000 feet are possible without joints. The tubes are color-coded.

Just to give you an idea of the usefulness of tubes in cables, here are a few of the applications in the

plant of just one public utility: boiler temperatures, main and reheat steam pressure, boiler feed and condensate pump pressure, condensate temperature, fuel oil and gas pressures, liquid levels, tide level, boiler drum water level, control of fuel feed, draft dampers, and numerous other controls.

This is a fast-growing use for copper tube, and while it will not match the demand for tube in commercial structures and private homes, nevertheless it is an important subject for industry and instrumentation engineers. In fact, a couple of years ago we thought that cabled tube had enough news interest to justify running an advertisement about it. Revere does not make cabled tube, but a Revere customer does, so we reported the matter as a service to industry. Mail began to arrive immediately, asking for further information. It is still pouring in, as the result of a second advertisement on the subject, appearing less than a year ago. American business certainly watches the advertisements for news it can use.



This is an example of imagination applied to a product that literally is as old as the pyramids. We have said in the past that "copper is the metal of invention," because it is so adaptable to man's genius. But there are many other materials, not merely metals, but such substances as glass, wood, plastics, fabrics and fibres, that also respond to an inspired touch. Why not get in touch with your suppliers, and let them know your problems? Perhaps they can arrive at a new way to use an old product, or even develop something new to solve an old problem. Just let it be known what you need, and watch people respond!

REVERE COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

Executive Offices: 230 Park Avenue, New York 17, N. Y.

Now the finest of needle valves is available



416 Stainless throughout...

In the Marsh Needle Valve, operating men found a valve that was better all the way through. Then came the call for a valve of like quality and precision for corrosion service . . . to be 416 stainless steel throughout.

The valve illustrated here is the answer. Like the parent valve, this new valve has safety and strength to spare . . . guaranteed for working pressures up to 10,000 psi . . . equally efficient and effective in any lower pressure range.

It too is machined from solid bar stock—in this case, 416 stainless steel. Its precision-ground and-machined stem is hardened 416 stainless. Packing is the special "Marpak" ring . . . one-piece, non-binding, long-lasting. So finely built is this needle throttling and cut-off valve that it can be easily throttled down to exceptionally fine regulation even on extreme pressure.

Read the list of features opposite. Then write for new bulletin No. NV-2 containing complete details.

The new all stainless valves (Series 1924) includes globe and angle patterns with double female connections in sizes $\frac{1}{8}$ ", $\frac{1}{4}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{3}{4}$ ", 1"; also globe and angle valves with male inlet and female outlet in sizes $\frac{1}{4}$ " and $\frac{1}{2}$ ".

MARSH INSTRUMENT CO. Dept. G, Skokie, Ill.
Sales affiliate of Jas. P. Marsh Corp.

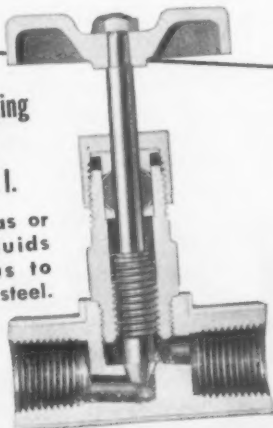
Marsh Instrument & Valve Co. (Canada) Ltd.
8407 103rd Street, Edmonton, Alberta, Canada
HOUSTON BRANCH PLANT: 1121 Rothwell Street, Sect. 15, Houston, Texas

416 Stainless Steel ...all the way through!

- Body and stem guide machined from bar stock.
- Valve stem, hardened stainless.
- Packing, special Marsh "Marpak" moulded ring.
- Fine stem threads for strength and precision throttling.
- Deep inlet and outlet thread chambers.
- Bodies marked in accordance with MSS regulations.

Maximum Working
Pressure
10,000 P.S.I.

Water, oil, gas or
corrosive fluids
not injurious to
416 stainless steel.



MARSH

"THE STANDARD
OF ACCURACY"

For More Information Circle No. 230 on Inquiry Card—Page 17

JANUARY, 1956



AMERICAN Tubular and Split RIVETS

In all metals, all styles,
for all industrial applications.

Write for price list.

AMERICAN RIVET COMPANY
849 N. Kedzie Ave., Chicago 51, Ill.

BUY AMERICAN...Tubular and Split Rivets...

For More Information Circle No. 231 on Inquiry Card—Page 17

A GLANCE AT THIS
HIGH PRECISION REDUCING
GEAR TRAIN (300-1 IN 6 STEPS)
EXEMPLIFIES THE
SKILL AND ABILITIES OF
BOEHME
INSTRUMENT CRAFTSMEN
FINE PRECISION
TOP QUALITY GEARS
ARE NOT HARD TO GET AT
BOEHME
IF YOUR REQUIREMENTS
INCLUDE UP TO AGMA PRECISION #3
1/8" TO 5" O.D.
16-180 D.P.
YOUR REQUIREMENTS WILL
RECEIVE PROMPT ATTENTION

H.O. Boehme, Inc.

Designers and Manufacturers Communication Equipment

Precision Electro-Mechanical Apparatus

915 Broadway • New York 10, N.Y.



For More Information Circle No. 232 on Inquiry Card—Page 17

new
products

Flexible Shaft Machine



A multi-speed, low pedestal flexible shaft machine is produced by the Stow Manufacturing Co., 109 Shear St., Binghamton, N. Y. Designated Model M 50, it has a swivel mounting, wide base and large casters for easy movement over rough floors. It is useful where the small diameter of fittings allows only flexible shafting. The M 50 has four speeds, changed by an eccentric counter-shaft and is equipped with a 6 foot flexible shaft. Motors range from 3/4 to 3 hp. The belt and pulleys are guarded.

Circle No. 39 on Inquiry Card—Page 17

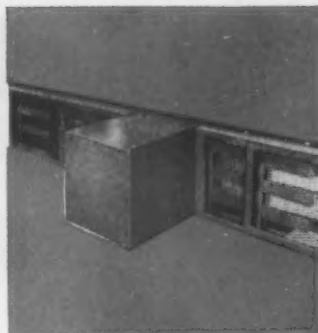
Leased Batteries Cut Outlay for Fork Truck Owners

Exide Industrial Div., The Electric Storage Battery Co., Philadelphia 2, Pa., is enabling industrial users to take advantage of the efficiency and savings of electric fork and lift trucks with relatively low initial cash outlays. Purchasers of electric industrial trucks may now lease batteries and chargers for periods up to five years by selecting one of several leasing and purchasing option agreements. The effect is to bring average initial outlay for electric trucks within range of the original cost of trucks powered by other means. Elimination of cash outlays for battery and charger, by means of leasing plans reduces average initial cost of an electric truck by approximately \$2,800.

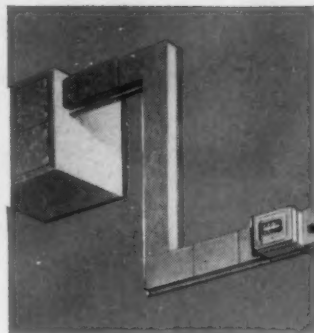
Circle No. 40 on Inquiry Card—Page 17



UNIT-VERSAL® SWITCHBOARDS
WITH ADD-A-UNIT DESIGN



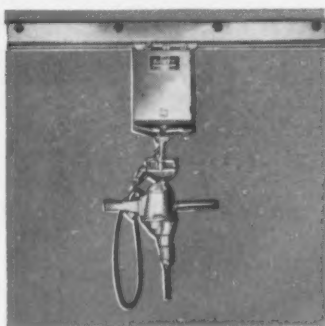
VENTILATED LO-X® BUS
DUCT FOR FEEDER CIRCUITS



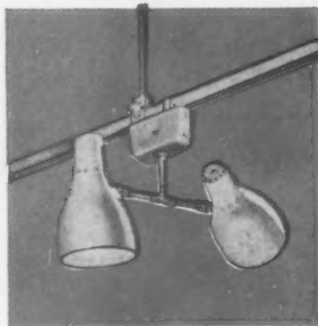
PLUG-IN BUSTRIBUTION®
DUCT FOR BRANCH CIRCUITS



VACU-BREAK® DISTRIBUTION
PANELBOARDS FOR ALL NEEDS



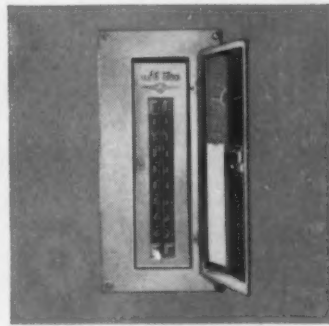
INDUSTRIAL TROL-E-DUCT®
FOR MOBILE POWER TOOLS



UNIVERSAL TROL-E-DUCT®
FOR FLEXIBLE LIGHTING



MAINTENANCE-FREE VACU-
BREAK® SAFETY SWITCHES



ELECTRI-CENTER PANELS WITH
PUSHMATIC® PROTECTION



FROM A SINGLE CIRCUIT BREAKER TO A COMPLETE SYSTEM—

BULLDOG can plan and supply all your power distribution needs!

BullDog—originators of such electrical advances as bus duct, trolley duct and Pushmatic circuit breakers—can engineer your plant's *entire* electrical distribution system from the point of power intake right down to a tiny circuit breaker on a machine. And provide the world's most modern, most flexible equipment to make it a model of efficiency.

Think of the benefits. Electrical power distribution dovetailed to today's needs . . . yet planned with vision to convert or expand swiftly to tomorrow's requirements. A complete electrical system *designed* to go together, thus insuring better performance. Continuous, round-the-clock dependability with fewer current outages, less downtime, less maintenance . . .

savings wherever you look. And a protected investment because all units are reusable and defy obsolescence.

As a responsible P. A., it will pay you to call on BullDog for your small special needs, too—even if it's nothing more than a safety switch for a single installation.

We have the products, we have the skills, we have the *desire* to plan, provide and coordinate everything electrical in your plant. Call in a BullDog Field Engineer. Or, write to BullDog Electric Products Company, Detroit 32, Michigan, for informative catalogs and pricing. No charge for service or literature, of course.

©BEP CO

IF IT'S NEW
... IF IT'S DIFFERENT
... IF IT'S BETTER ... IT'S



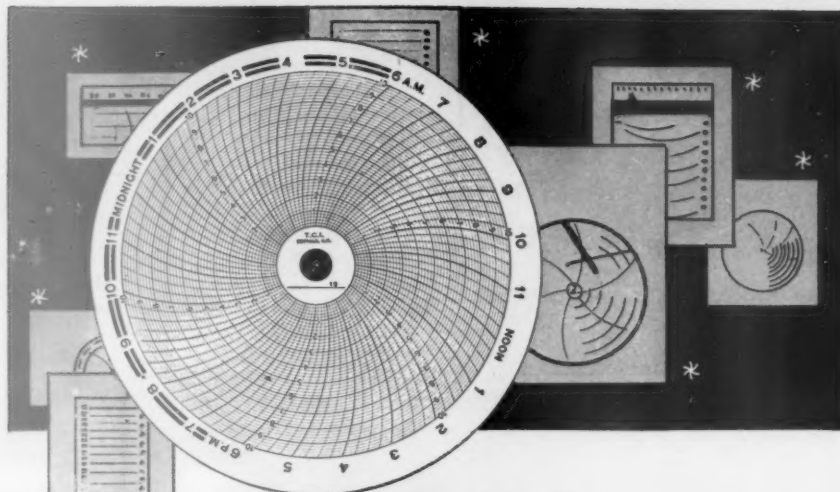
BULLDOG
ELECTRIC PRODUCTS COMPANY
A Division of I-T-E Circuit Breaker Company

Export Division: 13 East 40th Street, New York 16, New York. In Canada: BullDog Electric Products Company (Canada), Ltd., 80 Clayson Road, Toronto 15, Ontario.

For More Information Circle No. 233 on Inquiry Card—Page 17

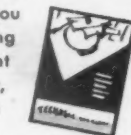
JANUARY, 1956

153



* RECORDING CHART procurement made easy . . . at less cost, too!

Why pay more for procurement than the value of the charts involved? Make use of Technical's chart service . . . where one purchase order will bring you any of 8000 different circular or strip recording charts, — many right from inventory. E. I. DuPont de Nemours does . . . so does the Mayo Clinic, and even Macy's . . . so do over 2000 other "Blue Chip" firms. Catalog 55 explains services . . . shows samples . . . write today.



Catalog 55



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188 VAN RENSSELAER ST.

BUFFALO 10, N. Y.

Nationally Represented by TECHNICAL SALES CORPORATION
16599 Meyers Road Detroit 35, Michigan

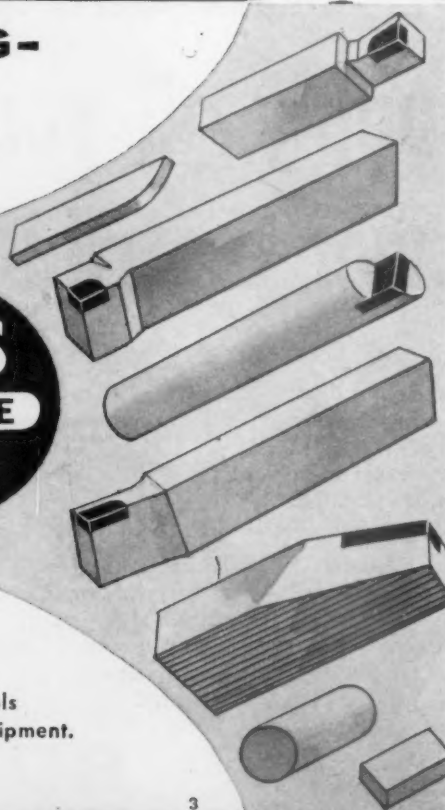
For More Information Circle No. 234 on Inquiry Card—Page 17

EVERYTHING—
from Soup to Nuts
in Tungsten Carbide

WILLEY'S
TUNGSTEN CARBIDE
TOOLS

Special tools are our specialty. Send specifications or prints for prompt quotations and delivery dates. Standard tools carried in stock for immediate shipment.

Write for Catalog



3

WILLEY'S CARBIDE TOOL CO.

SOLE MAKERS OF WILLEY'S METAL

1342 W. Vernor Highway

Detroit 1, Michigan

For More Information Circle No. 235 on Inquiry Card—Page 17

new
products

Overheat Protector Mounts in Motor Windings, Transformers

A small tubular shaped inherent overheat protector that can be mounted directly in motor windings or small transformer enclosures is now on the market. It is intended particularly for shaded pole and permanent split-capacitor fan motors. A disc-type thermal element assures positive snap-acting make and break. The snap-acting element and contacts are enclosed in a self-insulating phenolic case. Unit is sealed to withstand varnish dipping and baking. The manufacturer is Metals & Control Corp., Spenser Thermostat Div., Attleboro, Mass.

Circle No. 41 on Inquiry Card—Page 17

Hoist Cuts Rigging Time 90%



A new type hoist, consisting of a platform which rides on a single column, can be completely erected by two men in three hours. It operates on a rigid vertical monorail that builds upon itself to any desired height. Because of the small area occupied by the column, the hoist could be suitable for installation in many places where other types of towers or lifts might not be practical. It is simple to operate and can be quickly disassembled into units of six feet or less, making it easy to move from one location to another. It finds many uses in industrial plants as a semi-permanent materials handling unit which can be mounted outside a building. It is a product of Hawkeye Engineering Co. Inc., Syracuse 4, N. Y.

Circle No. 42 on Inquiry Card—Page 17

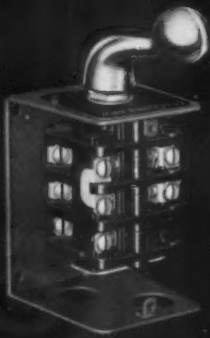
For More Information Circle No. 236 on Inquiry Card—Page 17→

PURCHASING

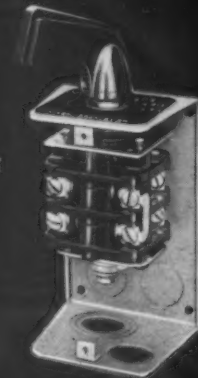
DRUM SWITCHES

with that **QUALITY** look...

that are **QUALITY**



Bulletin 350 Style B Master Drum Switch with cover removed to show contacts



Bulletin 806 Style C Drum Switch for surface mounting

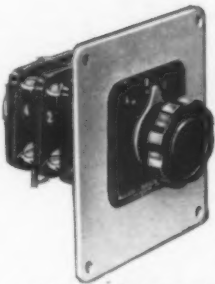


Bulletin 806 Style B Transfer Switch in Type 1 enclosure

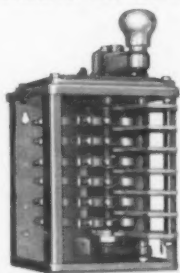


Bulletin 350 Drum Switch in Type 4 watertight enclosure

Master Switches • Transfer Switches • Instrument Switches in Various Mountings and Contact Arrangements



Bulletin 806 Transfer Switch for flush mounting.



Bulletin 365 Drum Switch for manual speed control of multispeed a-c motors, with cover removed to show stationary and drum contacts.

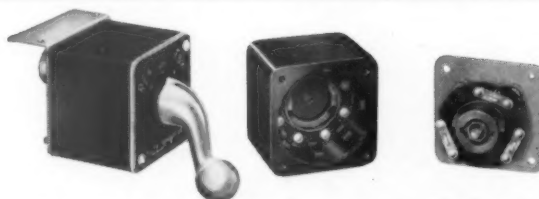
Drum switches are sometimes the simplest and lowest cost units for handling sequence control... or for monitoring a group of indicating instruments. Often drum switches are the best answer for reversing service or for speed control of variable speed a-c motors.

The Allen-Bradley line of drum switches includes such a broad range of types and sizes that practically any requirement can be satisfied. Silver alloy contacts of simple design... good contact pressures... rugged construction... assure long, trouble free life.

Though low in cost, Allen-Bradley drum switches are a **QUALITY** product. Write for A-B Handy Catalog.

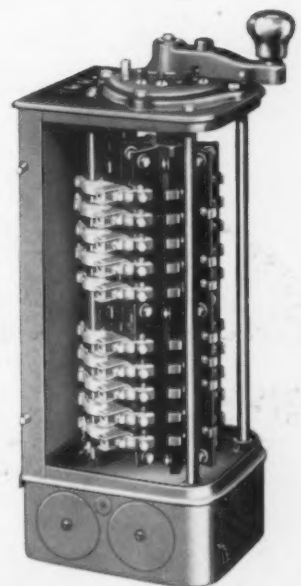
Allen-Bradley Co., 1316 S. Second St., Milwaukee 4, Wis.
In Canada—Allen-Bradley Canada Ltd., Galt, Ont.

BULLETIN 350 STYLE A REVERSING DRUM SWITCHES



Style A Reversing Drum Switches are designed for across-the-line starting and reversing of small squirrel cage motors. Can be used for single phase motors, and for d-c shunt

and compound wound motors. Will handle a-c single phase motors up to 1½ hp, 220 v; polyphase motors up to 2 hp, 220-440-550 v; and d-c motors up to ¼ hp, 115-230 v.



Bulletin 375 Drum Controller for speed control of slip-ring alternating-current motors.



The Sign of
QUALITY
Motor Control

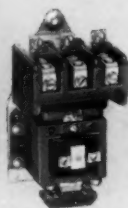
ALLEN-BRADLEY
MOTOR CONTROL
QUALITY

1-56-M

ALLEN-BRADLEY A-C CONTACTORS



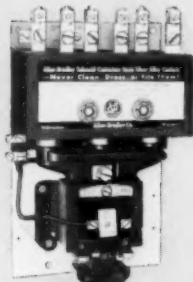
2 pole—Size 00
10 ampere



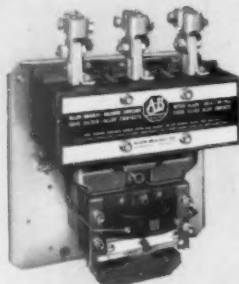
3 pole—Size 1
25 ampere



3 pole—Size 2
50 ampere



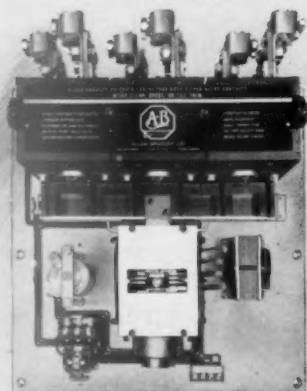
3 pole—Size 3
100 ampere



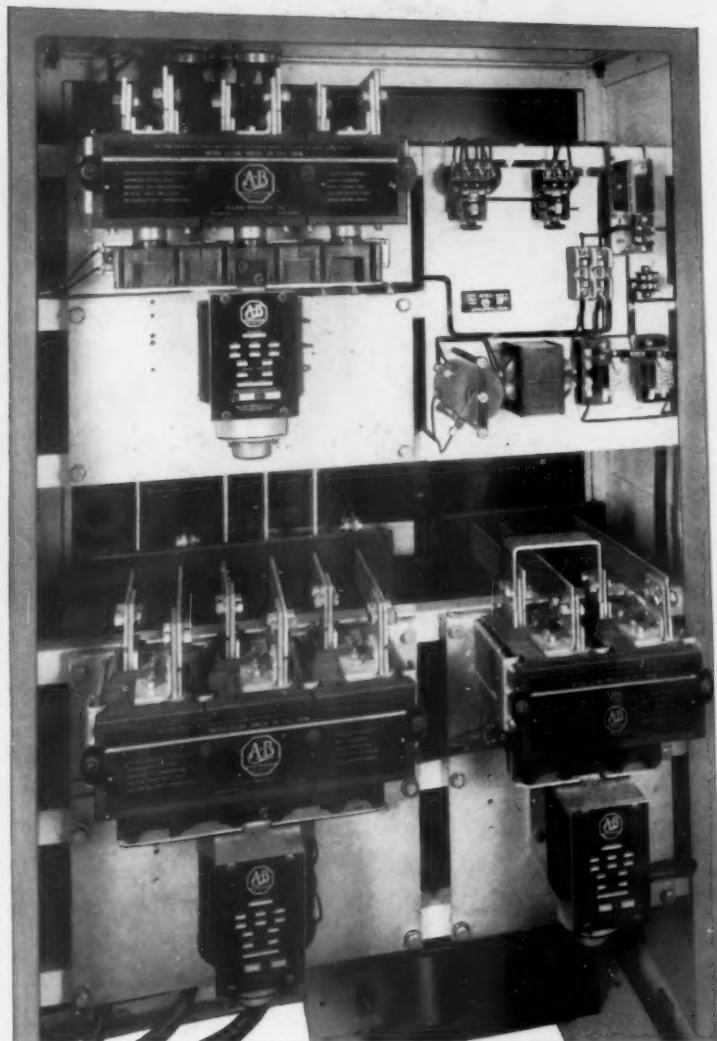
3 pole—Size 4
150 ampere



3 pole—Size 5
300 ampere



3 pole—Sizes 6 & 7
600 & 900 ampere contactors



250 Hp, Bulletin 746 automatic autotransformer showing Allen-Bradley Size 7 contactors

A-C and D-C CONTACTORS 10 to 900 Amperes with Double Break, Silver Alloy Contacts

The only complete line of solenoid contactors on the market. Allen-Bradley offers nine sizes...from Size 00 (10 amperes) to Size 7 (900 amperes), one to four poles.

There is no contact maintenance...no pins, pivots, or bearings to give trouble. Just one moving part—the simple solenoid plunger. Operating characteristics are consistent for all nine sizes.

Enclosures can be supplied for general purpose, water-tight, dust-tight, and explosion-proof service.

Allen-Bradley controls are an added sales asset to any machine. May we send you our catalog?

Allen-Bradley Co., 1316 S. Second St., Milwaukee 4, Wis.
In Canada: Allen-Bradley Canada Ltd., Galt, Ont.

ALLEN-BRADLEY
SOLENOID CONTACTORS
QUALITY



want quick delivery?

Don't wait for special steels! Get them fast from your nearby Crucible warehouse. You'll find it has a full range—and the service is always tops, whether you order by the pound or ton.

So, for fast, nearby delivery of any type of special steel, call Crucible—big enough to serve you, small enough to want to.

Stocks maintained of:

Rex High Speed Steel . . . ALL grades of Tool Steel (including Die Casting and Plastic Die Steel, Drill Rod, Tool Bits, and Hollow Tool Steel Bars) . . . Stainless Steel (Sheets, Bars, Wire, Billets, Electrodes) . . . Max-el, HY-Tuf, AISI Alloy, Onyx Spring, Hollow Drill Steel and other special purpose steels.

CRUCIBLE WAREHOUSE SERVICE

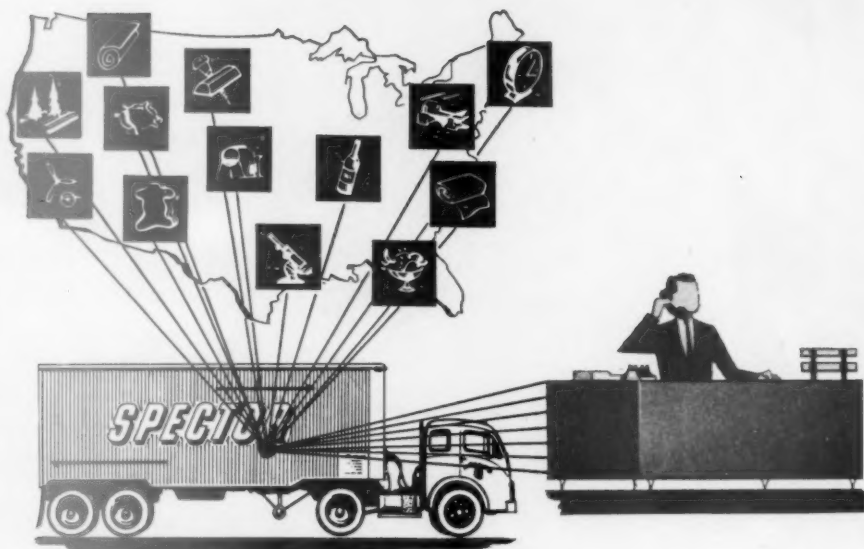
Crucible Steel Company of America

General Sales Offices, Oliver Building, Pittsburgh, Pa. Branch Offices and Warehouses: Atlanta • Baltimore • Boston • Buffalo • Charlotte • Chicago • Cincinnati • Cleveland • Dayton • Denver • Detroit • Houston • Indianapolis • Los Angeles • Milwaukee • Newark • New Haven • New York • Philadelphia • Pittsburgh • Providence • Rockford • San Francisco • Seattle • Springfield, Mass. • St. Louis • St. Paul • Syracuse • Toronto, Ont.

For More Information Circle No. 237 on Inquiry Card—Page 17

the wise selector routes it

SPECTOR



Customized

FREIGHT TRANSPORTATION SERVICE

**provides a real opportunity for
improving your purchasing effort**

Transportation is one of the most significant factors in the cost-control and efficiency of your purchasing activities. A well planned program must take into account the advantages and limitation of the various carrier services available. Invariably, as most traffic men will agree, it's the truck that offers the maximum in geographical range, flexible service, cost relief.

Serving more than 5000 communities in 37 states, Spector provides a fast dependable transportation service . . . a service that will assuredly help improve your over-all buying practices. Consult your traffic manager or your nearest Spector representative for the facts. He'll show you scores of opportunities to enlarge your list of sources, tighten and coordinate your flow of raw materials, reduce plant inventories, integrate your buying with the distribution of your products.

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St. Louis • Springfield (Mass.) • Worcester

For More Information Circle No. 238 on Inquiry Card—Page 17

new
products

Weighing Sticky Materials Automatically



The Richardson Scale Co., Van Houten Ave., Clifton, N. J., announces an automatic scale adhesive and non-free flowing material as accurately as dry aggregate material. The unit delivers a selected amount of material, the weight of which is the difference between a fully and partially loaded scale. Electronic controls govern the differential weighting and the conversion of weight from analog to digital indication. The belt conveyor has a scraper to keep material from building up. A regulator adjusts the depth of material on the belt. There are adjustments for belt tension and take up.

Circle No. 43 on Inquiry Card—Page 17

Lead Bearing Steel Plate Machines Better

Under the trade name of E-Z-Cut, a lead bearing steel plate is being marketed by Joseph T. Ryerson & Son, Inc., Box 8000-A, Chicago 80, Ill. Compared with plate which depends on addition of sulfur to provide free cutting quality, the lead bearing steel incorporates improved machinability, and superior welding, polishing and plating properties. Because of its superior welding properties, in comparison to the high sulphur content plate, it is expected that the lead bearing plate will find increasing favor in applications in which welding, in addition to extensive machining is involved.

Circle No. 44 on Inquiry Card—Page 17

**PUT AIR
AT YOUR FINGERTIPS**



Drop Forged Stainless Steel—withstands hard use; shielded operating button; comfortable grip; countersunk nose; protective hand guard doubles as hang-up hook—parts easily replaced.



Button Type—forged brass body; variety of interchangeable noses; easy grip—parts easily maintained.

Lever Type—forged brass body; air controlled from a puff to a breeze; hang-up arrangement; steel lever; comfortable grip; interchangeable noses—easily maintained.



Use Schrader blow guns . . . 36 designs and styles

Schrader Blow Guns are made to *fit your hand* . . . *fit your job*! Schrader Blow Guns are built to take it—here's why:

They're rugged both in design and construction. Bodies are drop-forged either of brass or stainless steel.

They're convenient—can be used anywhere. Blow gun circuits—using Schrader Couplers, Hose and Automatic Hose Reels—take little space, yet put compressed air right at your fingertips.

They're economical—they have few moving parts.

And replacement parts, when and if needed, are easily installed.

They're versatile—with nine interchangeable noses—both fixed and adjustable—that fit all three standard-type guns, you can't think of a blow-gun application that Schrader can't meet.

It's easy to find out for yourself what a wide selection of blow guns is in the complete Schrader Line of air control equipment. Write today—or, if you prefer, fill out the coupon below.

Schrader

REG. U. S. PAT. OFF.

LEADERS IN AIR CONTROL SINCE 1844

SPECIAL ADJUSTABLE NOSES



VARIOUS STANDARD NOSES



The complete Schrader line of pneumatic accessories includes everything you need

A. SCHRADER'S SON

Division of Scovill Manufacturing Company, Incorporated
473 Vanderbilt Avenue, Brooklyn 38, N.Y., Dept. C-13

I am interested in more information on _____

Name _____ Title _____

Company _____

Address _____

BALLS:

MADE OF STEEL,
BRASS, BRONZE, MONEL-
METAL, STAINLESS STEEL



HOOVER

*The Aristocrat of
Bearings*

BALL BEARINGS:

AMERICA'S ONLY
BALL BEARING WITH
HONED RACEWAYS



**HOOVER BALL
AND BEARING COMPANY**
ANN ARBOR, MICHIGAN

For More Information Circle No. 240
on Inquiry Card—Page 17

new
products

These Abrasive Wheels Are Stronger & Safer

A novel construction has been incorporated by Simonds Abrasive Co., Tacony & Fraley Sts., Philadelphia 37, Pa., into their high speed abrasive wheels to impart extra strength and safety. The improvement consists of a special safety web backing of spiral wound rayon auto tire cord—the same feature which gives automobile tires their extra safety. They are said to outlast conventional abrasive cloth discs as much as 40 to 1, with resultant time and labor savings due to fewer wheel changes. The wheels are a lightweight, rigid type, reinforced resinoid-bonded-abrasive for use on disc and right angle type portable grinders.

Circle No. 45 on Inquiry Card—Page 17

Unit to Spot Railroad Cars Travels On Tracks or Road

The Whiting Corp. Harvey, Ill., is manufacturing a "trackmobile" that hauls, switches, and spots railroad cars. It is designed for use on factory sidings, and other industrial trackage. It operates on both road and track. It travels on roadways, or across track, on 4 pneumatic wheels. When the "trackmobile" is astride a track, the automotive-type road wheels are retracted and the machine rests on its rail wheels, ready for track operation. This conversion from road to rail wheels only takes 90 secs. This machine can earn its keep every hour by doubling as a rail switching unit or as a tractor for pulling carts and skids about a plant on its pneumatic road wheels.

The machine develops a draw-bar pull much greater than its own weight. After it has been coupled to a car, a constant-pressure type hydraulic jack on the unit lifts the freight car slightly and thus transfers part of the car's weight on to the car spotter. This enables the machine to develop as much as 12,000 lb of draw-bar pull which is sufficient to pull a number of heavily loaded cars. The operator does not

(Please turn to page 162)

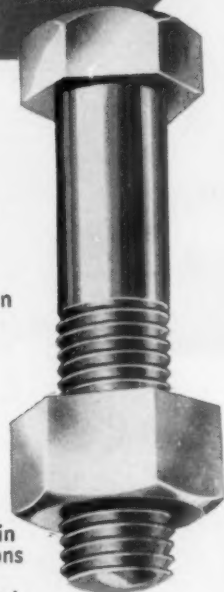
Uniform
Class 3 Fit

BOLTS NUTS STUDS

TITANIUM

- Carbon Steel
- Alloy Steels
- Stainless Steels
- Silicon Bronze
- Naval Brass
- Monel Metal

You can depend on a uniform Class 3 fit if required when you buy Pawtucket threaded fasteners. Standard items or specialties — all Pawtucket products are accurately made in standard dimensions or to your specifications. Heat treating with precision-controlled modern equipment.



BETTER BOLTS SINCE 1882

PAWTUCKET

MANUFACTURING COMPANY

























327 Pine St. • Pawtucket, R. I.
THE PLACE TO SOLVE YOUR BOLT PROBLEMS
T.M. REG.

"The Bolt Man"

For More Information Circle No. 241
on Inquiry Card—Page 17

PURCHASING

6 Reasons why Waldes Truarc is your one dependable source for retaining rings

					
Series 5000 internal	Series 5100 external	Series 5008 inverted internal	Series 5108 inverted external	Series 5001 bowed internal	Series 5101 bowed external
					
Series 5002 beveled internal	Series 5102 beveled external	Series 5103 crescent	Series 5131 bowed E-ring	Series 5133 E-ring	Series 5139 locking prong
					
Series 5555 grip ring	Series 5107 interlocking	Series 5005 self-locking internal	Series 5105 self-locking external	Series 5300 triangular nut	Series 5305 triangular self-locking
					
Series 5400 A special purpose	Series 5104 special purpose	Series 5500-31 special purpose	Series 5500-96 special purpose	Series 5504 special purpose	Series 5505 special purpose
WHATEVER YOU MAKE, THERE'S A WALDES TRUARC RING DESIGNED TO SAVE YOU MATERIAL, MACHINING AND LABOR COSTS					

COMPLETE SELECTION—All your retaining ring requirements can be obtained from this one dependable source. Waldes Truarc rings are available in 36 functionally different types... as many as 97 standard sizes within a ring type... 5 metal specifications and 14 different finishes.

MANUFACTURING EXPERIENCE—Waldes Truarc pioneered precision retaining rings. Truarc Rings have been standardized by leading U. S. industries and Government agencies. Waldes Kohinoor, Inc. has over 50-years experience in inventing, developing, and manufacturing precision fasteners.

QUALITY CONTROL—Every step in the manufacture of Waldes Truarc rings—from engineering and raw materials through to the finished product—is carefully controlled and tested in our own modern plant. Truarc standards are the highest in the industry—your guarantee of consistent, uniform quality.

DESIGN SERVICE—For help in designing new products or in refining present designs, send your blueprints to Waldes Truarc engineers. Whether your product requires standard or custom-designed rings, these experts are ready to help you. They will also design special assembly jigs and fixtures—or even help you set up an automation assembly operation.

FIELD ENGINEERING SERVICE—More than 30 engineering-minded factory representatives and 700 field men are available to you on call! This engineering service can prove invaluable in helping you to solve design, assembly and production problems.

DISTRIBUTION—Truarc rings are available from leading OEM Distributors in 90 stocking points throughout the United States and Canada.



WALDES

TRUARC®

RETAINING RINGS

WALDES KOHINOOR, INC.

LONG ISLAND CITY 1, NEW YORK

WALDES TRUARC Retaining Rings, Grooving Tools, Pliers, Applicators and Dispensers are protected by one or more of the following U. S. Patents: 2,382,948; 2,411,426; 2,411,761; 2,416,852; 2,420,921; 2,428,341; 2,439,785; 2,441,846; 2,455,165; 2,483,379; 2,483,380; 2,483,383; 2,487,802; 2,487,803; 2,491,306; 2,491,310; 2,509,081; 2,544,631; 2,546,616; 2,547,263; 2,558,704; 2,574,034; 2,577,319; 2,595,787, and other U. S. Patents pending. Equal patent protection established in foreign countries.

For More Information Circle No. 242 on Inquiry Card—Page 17

quality
is just one reason
for buying
minnesota
rubber
molded parts

Evidence of greater density of injection molded finished parts. Cross sections of Standard Buna N O-ring compound, .027" x .019", magnified 240 diameters by Univ. of Minnesota.



Compression molded rubber.



Injection molded rubber by M. R. Notice greater density.

Insulators
Bushings
Grommets
Vibration mounts
Valves
O-rings
Quad Rings
Rubber-to-metal
Sub-miniature parts
Custom molding

Low price is another important benefit of M. R.'s exclusive *injection molding* process. Our on-time deliveries save expediting costs, too. Another big and hard-to-find advantage: tolerances as close as $\pm .002$ inch. Rubber structure is tougher and more homogeneous. That means your M. R. parts have longer in-use life.

Minnesota Rubber's laboratories will develop rubber formulations to meet your strictest requirements. Modern production equipment plus statistical quality control assures consistently high quality. Send us your blueprints for quotation today. Our sales engineer force is ready to work with you on your problems.

Send for quotations today.

Minnesota rubber and gasket company

originators of modern rubber injection molding
Dept. 611, 3630 Wooddale Ave.,
Minneapolis 16, Minn., Phone: WE 9-6781

your reliable source
of custom molded rubber parts
... world's leading
manufacturer of rubber O-rings
... and originator of the
revolutionary new seal,
QUAD-RING®.

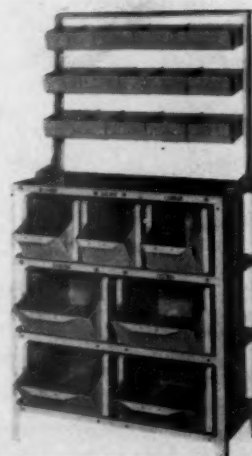
new products

(Continued from page 160)

have to get out of his cab to couple or uncouple. All controls, including those for positioning, raising and lowering the automotive type wheels, and coupling and uncoupling, are located in the cab. The cab is elevated and enclosed in glass to provide 360° visibility and all-weather operation.

Circle No. 46 on Inquiry Card—Page 17

Module Unit Simplifies, Expedites Assembly Jobs



A module unit, measuring 14" deep, 28" long and 30" high is said by Bathey Mfg. Co., Plymouth, Mich., to provide greater flexibility of arrangement for parts storage and assembly operations. The stand is fabricated of heavy gage steel, welded joints, with baked enamel finish. Drilled holes in strategic locations permit grouping of stands into various units with connecting shelves for large or small work areas. Smooth top work area is designed to permit attachment of bench top bin units. The unit can be combined with other equipment to provide storage facilities for practically any manufacturing operation.

Circle No. 47 on Inquiry Card—Page 17

**FOR MORE INFORMATION
ON PRODUCTS IN
THIS ISSUE
USE INQUIRY CARD—PAGE 17**

For More Information Circle No. 243 on Inquiry Card—Page 17

If this number could talk...and it can!



TO GET STEEL GOOD ENOUGH for Timken® bearings we make our own. We're America's only bearing manufacturer that does. And we make the steel nickel-rich for added toughness. Although we think it's the finest bearing steel used, we're always checking for ways to improve it. For example, the above x-ray diffraction unit to study residual stresses.



WE LEAVE NOTHING TO CHANCE. Every one of these bearing cones has already passed the most rigid inspections. Yet these women make an extra one. They take one last look for surface defects, too-tight or too-loose cages, and once more check the bore dimensions. This extra inspection is another step that makes Timken bearings the number 1 value in the products you build or buy.

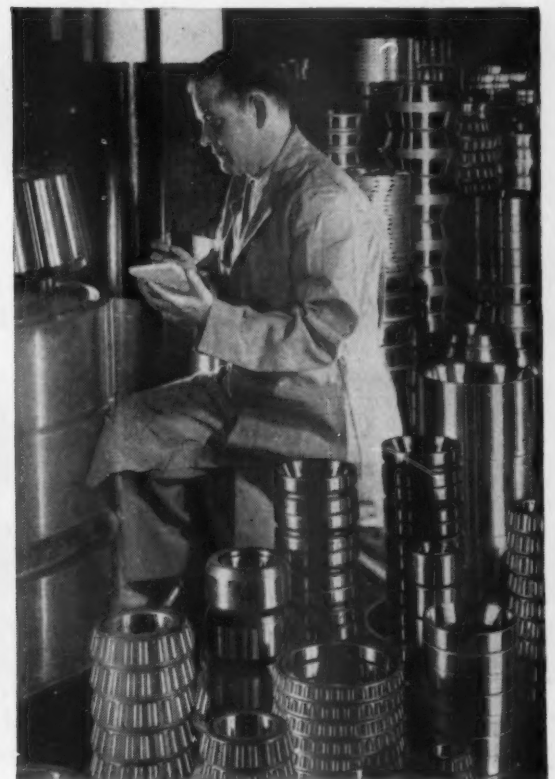
TIMKEN is number 1 for VALUE

TRADE-MARK REG. U. S. PAT. OFF.

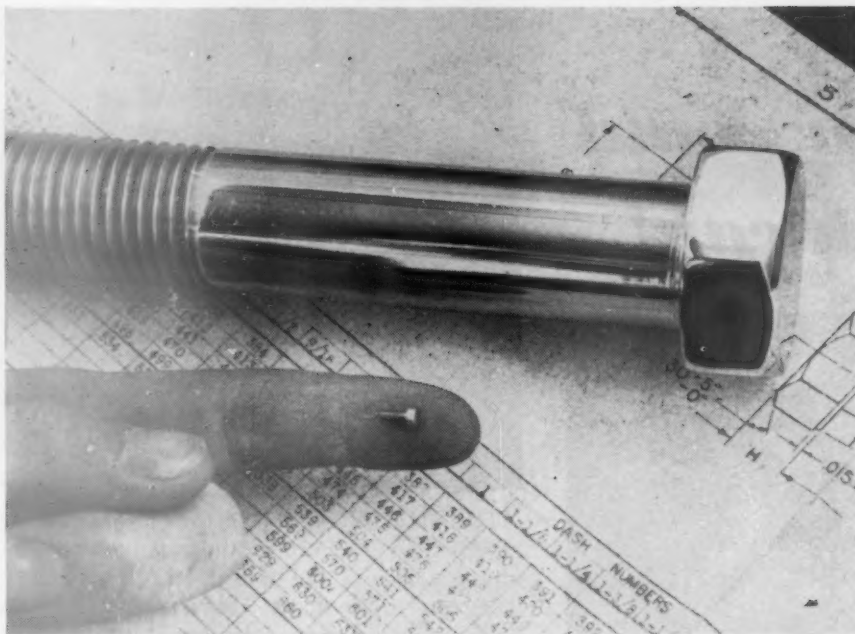
NOT JUST A BALL  NOT JUST A ROLLER  THE TIMKEN TAPERED ROLLER  BEARING TAKES RADIAL  AND THRUST  LOADS OR ANY COMBINATION 



THE NUMBER 25580 on the bearing cone, coupled with 25520 on the cup, tells you that this is a certain size of tapered roller bearing. With the trade-mark "Timken" also on the bearing, the number tells you about the bearing's fine quality and the services that go with it.



NAME YOUR REQUIREMENTS—we'll meet them from the 5,850 sizes and 26 types of Timken tapered roller bearings that we can make in any quantity. For quality, service and public acceptance, always specify "Timken" when you specify a bearing number. The Timken Roller Bearing Company, Canton 6, Ohio.



ALLMETAL'S HEX HEAD STOCK spread includes 2-56 x 3/16 cap screw (1/100 oz.), and 1 1/4-7 x 7 1/2 bolt (a weighty 3 lbs., 1 oz.). Between these two extremes, 497 different hex head bolt sizes are carried in stock.

WORLD'S LARGEST STAINLESS FASTENER STOCK AT ALLMETAL

Leading manufacturers launched a switch to a fast growing firm (specialists in stainless steel) for their fastener supplies. They found that there's no stock like the largest, and Allmetal Screw Products Company has the largest stock of stainless fasteners in the world.

One significant reason manufacturers find Allmetal stainless fasteners so fascinating is their hex head bolt stock (see cut). And talent to follow through with fast delivery of screws, nuts, washers, rivets, pins, nails, and "AN" fasteners.

Chief cause for Allmetal's ability to turn out fasteners — and have them ready for immediate shipment — is their spanking new plant in suburban New York (Garden City, Long Island). These added facilities — plus 26 years of specialization in tough alloys — give Allmetal the combination to supply stainless fasteners when needed. Stock list brochure available.

MANUFACTURERS SINCE 1929

ALLMETAL

SCREW PRODUCTS COMPANY, INC.

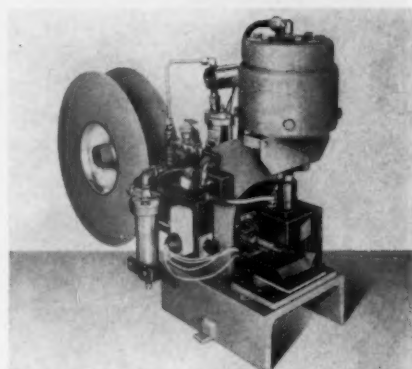
GARDEN CITY

NEW YORK

For More Information Circle No. 245 on Inquiry Card—Page 17

new
products

Self-Soldering Terminal Attaching Machine



The Etco electric terminal attaching machine automatically crimps, solders and cuts off electric terminals in one operation. In-line feed system permits flow of continuous strip terminals. There is an electric solenoid trip on air feed. Heating is thermostatically controlled and operation is by foot treadle. It eliminates handling loose terminals and soldering irons and can accommodate from 10 to 15 thousand terminals a day. Etco is a product of the Patton-MacGuyre Co., 17 Virginia Ave., Providence 5, R. I.

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Rotary Machine



A hand operated deep throat combination machine, produced by Niagara Machine & Tool Works, 683 Northland Ave., Buffalo 11, N.Y., can be readily equipped with 12 different pairs of standard rolls. The machine is thus enabled to perform a wide variety of jobs:

(Please turn to page 168)

For More Information Circle No. 246
on Inquiry Card—Page 17→



All belt and two yards wide

(Guard lifted and coolant flow stopped to reveal belt action.)

PHOTOGRAPHED AT BELL AIRCRAFT CORPORATION.

86 inches wide, in fact — by 138 inches long . . . *all* belt! Here's why: to generate taper of the required precision on huge aluminum aircraft "skins," conventional milling methods were far too slow and costly. So CARBORUNDUM abrasive engineers, in collaboration with the Air

Force, Bell Aircraft Corporation, and the Hill-Acme machine people, designed and produced this special belt, in proper gradings to meet the rigid specifications of surface finish and dimensional accuracy.

● If *you* are stymied by an unusual grinding problem, turn to the source

with the greatest experience and application "know-how" in the abrasive field today! Call in your CARBORUNDUM Distributor or salesman, or write The Carborundum Company, Niagara Falls, New York. In Canada: Canadian Carborundum Company, Ltd., Niagara Falls, Ont.

Through application "know-how" and product quality

CARBORUNDUM

REGISTERED TRADE MARK

continually puts more **sense** in your abrasive **dollar**



Three cheers for the red, white and cool

The "see-through" safety guard was specially made for this photo only.

Distinctive RED blotter on a new WHITE wheel is the sign of COOL tool grinding worth cheering about! And that's not all... V40 Bond Tool Room Wheels by CARBORUNDUM cut faster, last longer and permit heavier infeeds without burning the stock or overheating the tool, even

on die steels and hi-vanadium types. And the outstanding form-holding ability of V40 Bond Wheels eliminates costly stops for wheel dressing halfway through a job. Try one in your shop today. There's a type for every tool room operation . . . easily identified by the V40

on the bright red blotter. Your CARBORUNDUM Distributor or salesman will arrange a free demonstration. For Bulletin A-1310, write The Carborundum Company, Niagara Falls, New York. In Canada: Canadian Carborundum Company, Ltd., Niagara Falls, Ontario.

Through product quality and application "know-how"

CARBORUNDUM
REGISTERED TRADE MARK

continually puts more **sense** in your abrasive **dollar**



Keith Alderson (above) is Traffic Co-ordinator for Sportsvision, Inc., in Hollywood. He says,

"I'm the Sunday morning quarterback!"

"When the final gun sounds on Saturday's football games," says Keith Alderson of Sportsvision films, "cameramen rush their film to us."

"By Sunday morning, we've got finished prints of Pacific Coast Conference games into the hands of the coaches. They call me their 'Sunday morning quarterback'!"

"But that's the easy part of the job."

"By evening, we've edited all the games into three half-

hour TV shows—Big Ten, PCC games, and the All American Game Of The Week. Out they go to 150 television stations for immediate showing.

"How do we do it? Air Express, across the board!"

"Nobody else can meet our schedules. Yet Air Express saves us money! Austin, Texas, to Hollywood, for instance, costs \$8.03 for 15 lbs. That's \$1.68 less than the next lowest priced air service."



Air Express



GETS THERE FIRST via U.S. Scheduled Airlines

CALL AIR EXPRESS . . . division of RAILWAY EXPRESS AGENCY

The "proof of a cleaner" is in the results YOU get!

When it comes to selecting a detergent, the only *true* measure of value lies in the results you get.

Oakite offers a wide variety of job-tested detergents that assure *quality* cleaning results at *less* per-unit cost.

Oakite results are ECONOMICAL because ...

...every Oakite detergent has been carefully pre-tested — both in the laboratory and in the field — to provide the best possible cleaning results at the lowest possible cost. Over 100 specialized cleaners are currently available ... each carefully compounded to give you perfect, low-cost results.

Oakite results are EFFICIENT because ...

...Oakite provides not only the cleaning materials, but the methods as well. Oakite provides numerous cleaning aids to improve almost every cleaning operation — and Oakite chemists and engineers are constantly at work developing newer, better methods to meet tomorrow's cleaning needs.

Oakite results are EFFECTIVE because ...

...extensively trained Oakite Technical Service Representatives stay with each cleaning problem from beginning to end. They instruct personnel on proper cleaning procedures; they supervise installation of cleaning equipment; they correct any bottle-necks that may occur.



Like to know how Oakite's "results-guaranteed" cleaning methods and materials can uncover new economies for you? Call in your local Oakite Man today for complete details. There's no obligation, of course. Oakite Products, Inc., 54 Rector Street, New York 6, N. Y.



Export Division
Cable Address: Oakite

Technical Service Representatives in Principal Cities of U. S. and Canada
For More Information Circle No. 248 on Inquiry Card—Page 17

new
products

(Continued from page 164)

turning, burring, wiring, elbow edging, beading, crimping body flanging, slitting, etc. Featuring deep throat construction and longer shaft ends for wider rolls, the rotary machine is ideally suited to a multitude of operations that cannot be performed on throatless machines.

Circle No. 49 on Inquiry Card—Page 17

Elevating Loader Feeds Parts Up to 6" Long To Machines



Designed to handle short bars, studs, etc., up to 6" long, a loader takes parts from the magazine of a machine, elevates them to the desired height and presents them for feeding to the next production machine, thus making the machine fully automatic. Delivery rate can be varied from 1 to 12 pieces per minute. The loaders, a product of Feedall, Inc., Willoughby, Ohio, are designed for specific feeder uses with blade elevating, vibratory or rotary feed as may be required.

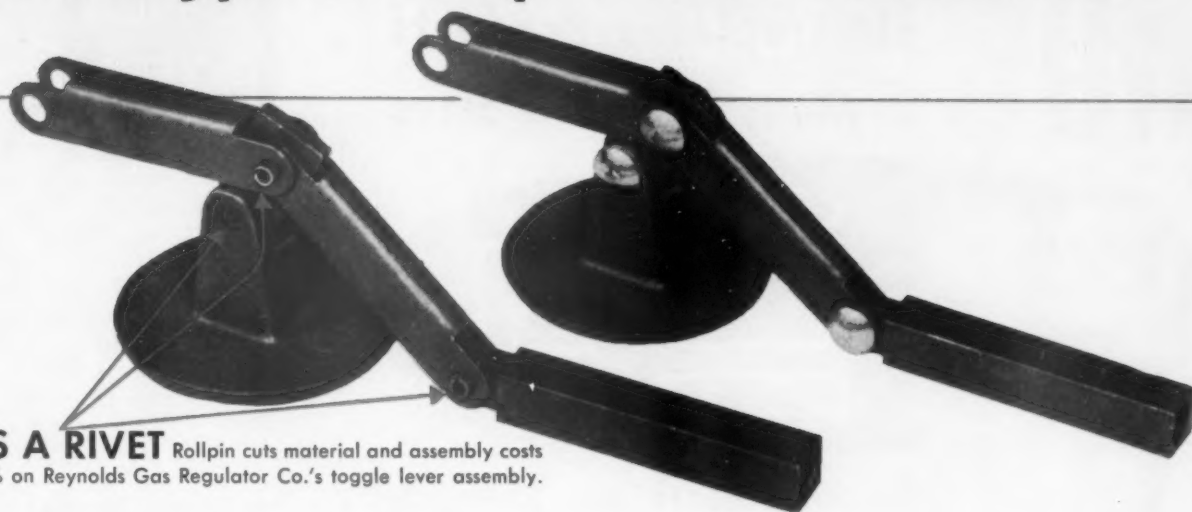
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Self Wrenching Locknut

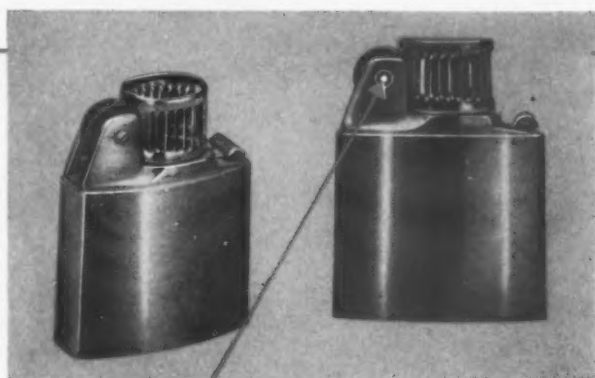
A self-wrenching locknut has been designed with greater fatigue strength and less weight for use wherever a removable self-wrenching nut is required. A lug on the nut prevents it from rotating during wrenching of the bolt by bracing itself against an adjoining surface. Both the nut and the lug are steel with a cadmium-plated finish. A nylon insert in the nut provides the locking feature. Thread sizes of the

(Please turn to page 170)

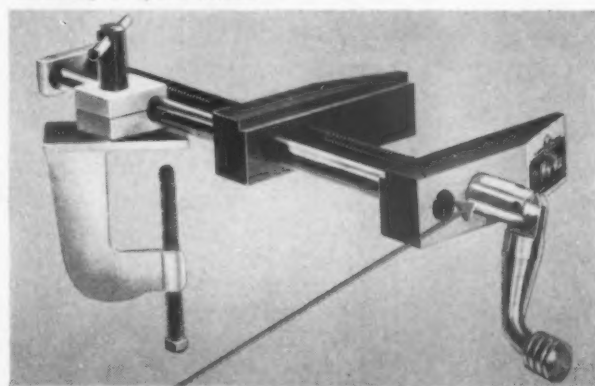
Three typical Rollpin cost reductions



AS A RIVET Rollpin cuts material and assembly costs 25% on Reynolds Gas Regulator Co.'s toggle lever assembly.



AS A SHAFT before and after shot of this Ronson lighter shows how Rollpin made savings of 1½¢ per unit in assembly of spark wheel.



REPLACING A TAPER PIN Rollpin saves 24¢ labor cost on each of American Machine and Foundry's MITY-7-VISES. Eliminates tool cost caused by breakage of small taper reamers.



Where can you use this simple fastener?



If you use locating dowels, hinge pins, rivets, set screws—or straight, knurled, tapered or cotter type pins—Rollpin can cut your production and maintenance costs as it does in every class of industry. Rollpin is a slotted tubular steel pin with chamfered ends that drives easily into standard holes, compressing as driven. Its spring action locks it in place—withstanding impact loading, stress reversals and severe vibration. No threading, peening or precision drilling needed. Rollpin is readily removable and can be re-used in the same hole.

ELASTIC STOP NUT CORPORATION OF AMERICA

MAIL COUPON FOR DESIGN INFORMATION

Elastic Stop Nut Corporation of America
Dept. R38-115, 2330 Vauxhall Road, Union, N. J.

Please send the following fastener information:

- ☐ Rollpin samples ☐ Here is a drawing of our product.
What self-locking fastener would you suggest?

Name _____ Title _____

Firm _____

Street _____ Zone _____ State _____

For More Information Circle No. 249 on Inquiry Card—Page 17

NOW ...Wire of High Finish for Electroplated Products in Many Shapes & Sizes



Bright, Smooth No. 3 Finish takes Plating Beautifully—Adds Eye-Appeal to Your Products

Continental's new technique for producing #3 finish flat and special shaped wire offers you a range of standard and special wire shapes with a satin smooth finish for electroplating purposes. Previously, only flat wire with a surface suitable for high polish electroplating was obtainable...but now from Continental you can specify #3 finish in flat, square, rectangular, oval, and other shapes on inquiry, in practically any size, temper, and analysis in low carbon and medium low carbon steels. (Note—some sizes of above shapes require special tooling before they can be produced.) Here is extra "eye-appeal" for moldings, product trim, or wherever a formed plated wire component is required. Send us a blueprint of your part, or mail the coupon today.

SPECIALISTS IN WIRE
FOR OVER HALF A CENTURY

CONTINENTAL

STEEL CORPORATION
KOKOMO, INDIANA

PRODUCERS OF:

Manufacturer's wire in many sizes, shapes, tempers and finishes, including Galvanized, KOKOTE, Flame-Sealed, Coppered, Tinned, Annealed, Liquor Finished, Bright, and special wire. ALSO, Coated and Uncoated Steel Sheets, Nails, Continental Chain Link Fence, and other products.

FILL OUT AND MAIL TODAY

Gentlemen: Please send us complete information concerning the new Continental #3 Finish Wire for Electroplating.

NAME _____
TITLE _____
FIRM _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____

For More Information Circle No. 250 on Inquiry Card—Page 17

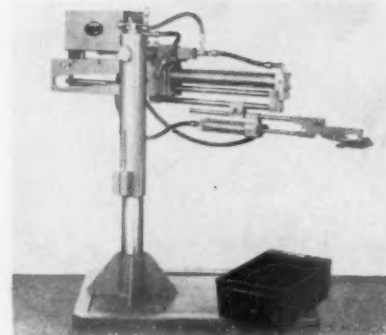
new
products

(Continued from page 168)

six nuts in the series are 1/4-28, 5/16-24, 3/8-24, 7/16-20, 1/2-20 and 9/16-18. Ultimate strength of the locknut ranges from 5,234 lb min for the smallest size to 30,640 lb min for the largest. They are manufactured by Elastic Stop Nut Corp., Union, N. J.

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Automatic Portable Press Unloader Cuts Handling



As a step towards bringing a larger degree of automation into the job shop, Sahlin Engineering Co., Inc., P.O. Box 289, Birmingham, Mich., has developed a portable press unloader with a new swiveling feature for side or back unloading. It is ideally suited for job shop use because it can be moved quickly from press to press and is easily adjusted for different jobs. It is also recommended for use with back-gear presses where the gearing prohibits the mounting of overhead iron hands. The entire unit is mounted on a heavy steel base, on wheels, and can be rolled to a press. Once there, it can be adjusted to suit the die height, and swiveled into position. The unloader removes small parts at high speed.

Circle No. 52 on Inquiry Card—Page 17

Semi-Reflector Fluorescent Mercury Lamp

A 400-watt fluorescent-mercury lamp of the semi-reflector type is being produced by the Westinghouse Lamp Div., MacArthur Ave., Bloomfield, N. J. As a high effici-

(Please turn to page 172)

Withstands far greater **SHOCK LOADS** than any standard V-belt

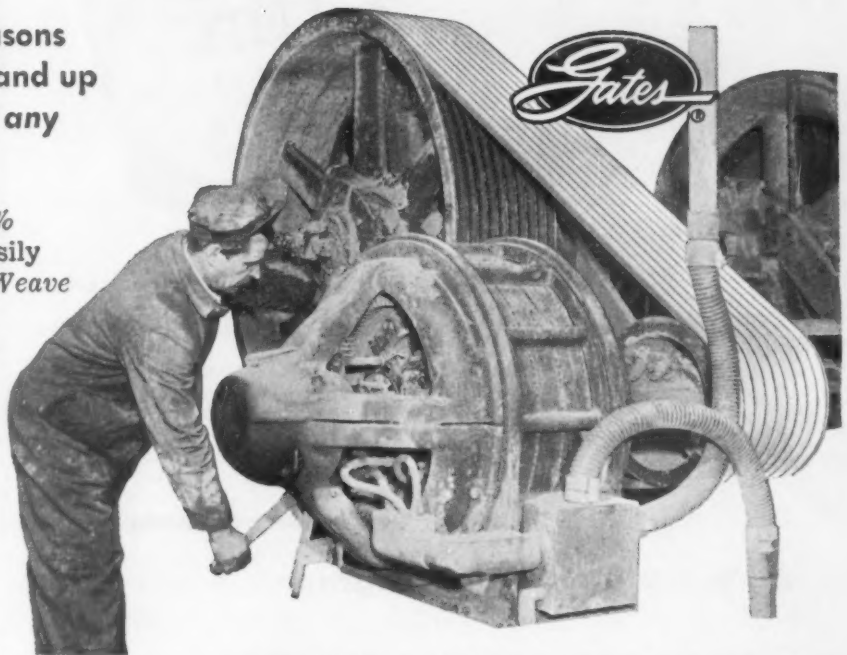
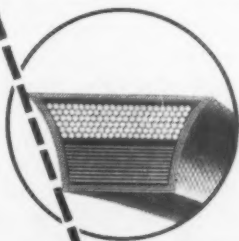
Here are the interesting reasons why Gates Super Vulco Ropes stand up months, even years longer than any standard V-belts...

1. Super-Strength Cords provide 40% greater horsepower capacity... easily absorb heavy shock loads. **2. Flex-Weave Cover** (U.S. Pat. No. 2519590) provides greater flexibility with far less stress on the fabric. Cover wears longer — increases belt life, lowers belt costs.

3. Concave Sidewalls (U.S. Pat. No. 1813698) provides sure pulling power, longer wear because sides straighten out as belt bends — make even contact with sheave walls.



Straight-sided belts bulge out when bent around sheave. Uneven contact causes uneven wear.



SHOCK LOAD of this big jaw crusher at Canadian Quarries, Ltd. is absorbed by Gates Super Vulco Rope Drive. Wherever shock load is severe, Gates Super Vulco Ropes cushion the shock—keep machinery replacement cost down.

4 other outstanding advantages

Resists Oil, Heat and Weather: Long life is assured even in the presence of excessive oil... even under prolonged exposure to heat and weather.

Provides Static Safety: The high electrical conductivity of Gates Super Vulco Ropes provide safer drives in explosive atmosphere.

Has Little Stretch When Wet: Low moisture absorption eliminates need for special take-up in wet locations.

Saves Space: Higher horsepower rating and greater resiliency may permit fewer belts, or smaller sheaves where space saving is vitally important.

Gates SUPER Vulco Rope

The V-Belt with 40% more horsepower capacity

TPA 5'

For More Information Circle No. 251 on Inquiry Card—Page 17

JANUARY, 1956

171

NEW**nylon, heavy-duty
industrial flashlights****2-CELL
N22**

Resistant to

- BREAKAGE
- CHEMICALS
- TEMPERATURE

**3LP****NEW Industrial
flashlight batteries**

GUARANTEED against corrosion damage to flashlights. They're fresh when you get them, stay fresh in your stockroom—they're not dated! Yet these superior batteries cost no more.

New "WORKMAN" flashlights are designed with every "wanted" feature. The lacquered aluminized reflector provides a perfect spot. There's a replaceable switch to insure effective operation year after year. The removable end cap has a spare lamp holder and a ring hanger molded of durable NYLON. No metal parts exposed. And the completely new design slips easily into the pocket. They're practically indestructible—stand up under rough, tough usage. Specify these new Ray-O-Vac NYLON flashlights—they have no equal!

Need special batteries? Radio, telephone, lantern, ignition, shot firing, emergency lighting, and other types of batteries are made by Ray-O-Vac. Also *custom designed* batteries specifically for your requirements... all with Ray-O-Vac's dependability and extra power. Check with your nearby representative or write us.

**RAY-O-VAC COMPANY
MADISON 10, WISCONSIN**



Division Offices: 212 East Washington Ave., Madison 10, Wisconsin
1388 Madison Avenue, Memphis 4, Tennessee • 461 Market Street, San
Francisco 5, California • 1775 Broadway, New York 19, New York
Ray-O-Vac Canada, Ltd., Winnipeg

For More Information Circle No. 252 on Inquiry Card—Page 17

**new
products**

(Continued from page 170)

ency light source, the new lamp is expected to find wide use in industrial installations, especially where dirt accumulation is appreciable. If the lamp is used in a dirt-laden atmosphere, its built-in reflector permits a significant reduction in amount of light dissipated by dirt-coated reflectors. This can result in as much as a 20% increase in light per dollar of power cost. Its initial lumen output is 19,000 and rated average life is 6000 hrs.

Circle No. 53 on Inquiry Card—Page 17

Barrel Finishing Media

Two barrel finishing media have been placed on the market by Norton Co., Worcester 6, Mass. One is "Tumblers T" consisting of Alundun vitrified bonded triangular shaped abrasive. This was developed to overcome problem of the wedging of abrasive in parts being tumbled. The second medium is "Tumblers N," a natural material used with good results in finishing, especially of die castings where conventional abrasives frequently cut through the outside protective layer of the casting. The introduction of these new triangular molded shapes of abrasive means that many intricate parts can now be barrel-finished with all the economy and better finish factors of this method.

Circle No. 54 on Inquiry Card—Page 17

**Self-Locking Insert
Eliminates Open Press Time**

A new-type, self-locking brass insert, which eliminates open press time, reduces rejects and speeds assembly, has been developed by the Phelps Mfg. Co., Westport, Conn., for manufacturers of molded and machined plastic parts and for use in die castings and all softer materials. This expansion insert is designed to be placed by hand or machine-fed into molded or drilled holes at any time after molding, effecting savings of as much as 20% by eliminating open press time. The insert is a self-contained unit consisting of a knurled brass shield and a locked in spreader. It has a full thread to within 1/32" of the depth of the threader.

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For More Information Circle No. 253
on Inquiry Card—Page 17→

PURCHASING

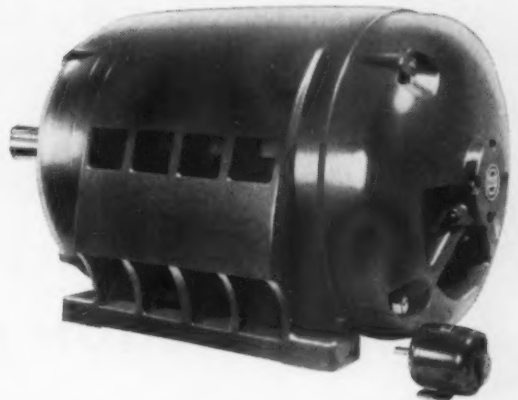
You Name It--Thousands of Ratings

From 1/8 to **400** H. P.

See **MASTER** for a selection of motor drives that you can get nowhere else—for specialized power drives unequalled for flexibility, compactness and performance. See Master for the right horsepower, right shaft speed, right mounting features—to add salability to your products, efficiency to your plant equipment.

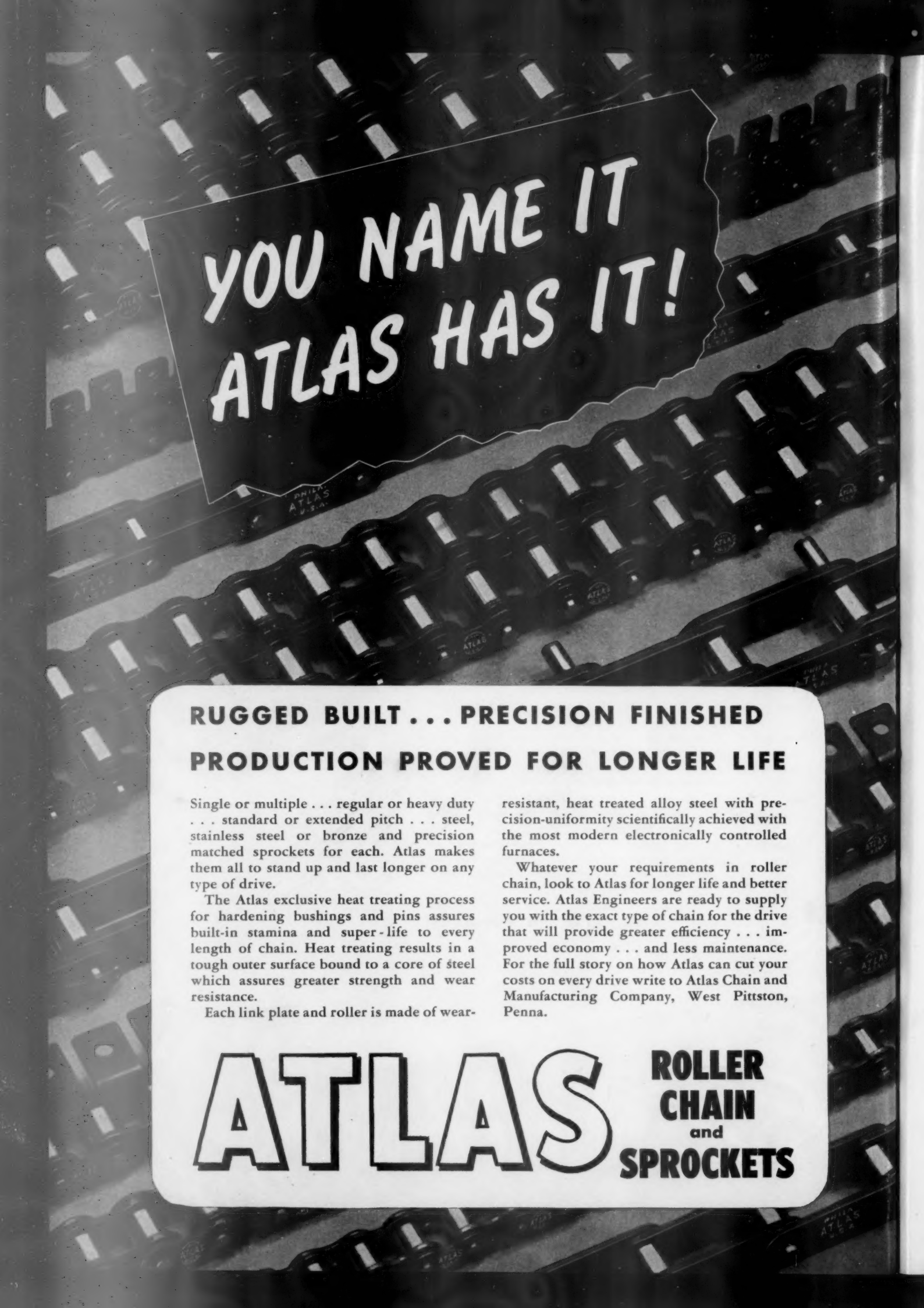
Master components are designed to combine in one compact unit to suit your needs exactly—all the way up to 400 H. P. Just ask us for information.

- Motor Ratings**...1/8 to 400 H.P. All phases, voltages, and frequencies.
- Motor Types**.....Squirrel cage, slip ring, synchronous, repulsion-start induction, capacitor, direct current.
- Construction**Open, enclosed, splash-proof, fan-cooled, explosion-proof, special purpose.
- Speeds**Single-speed, multi-speed, and variable speed.
- Installation**Horizontal or vertical, with or without flanges and other features.
- Power Drive** Electric brakes (2 types)—5 types of gear reduction up to 432 to 1 ratio. Mechanical and electronic variable speed units—fluid drives—every type of mounting.



THE MASTER ELECTRIC COMPANY
Dayton 1, Ohio

MASTER
ELECTRIC MOTORS



**YOU NAME IT
ATLAS HAS IT!**

**RUGGED BUILT . . . PRECISION FINISHED
PRODUCTION PROVED FOR LONGER LIFE**

Single or multiple . . . regular or heavy duty . . . standard or extended pitch . . . steel, stainless steel or bronze and precision matched sprockets for each. Atlas makes them all to stand up and last longer on any type of drive.

The Atlas exclusive heat treating process for hardening bushings and pins assures built-in stamina and super-life to every length of chain. Heat treating results in a tough outer surface bound to a core of steel which assures greater strength and wear resistance.

Each link plate and roller is made of wear-

resistant, heat treated alloy steel with precision-uniformity scientifically achieved with the most modern electronically controlled furnaces.

Whatever your requirements in roller chain, look to Atlas for longer life and better service. Atlas Engineers are ready to supply you with the exact type of chain for the drive that will provide greater efficiency . . . improved economy . . . and less maintenance. For the full story on how Atlas can cut your costs on every drive write to Atlas Chain and Manufacturing Company, West Pittston, Penna.

ATLAS **ROLLER
CHAIN
and
SPROCKETS**

*"Our printing looks better
on Corabrite..."*



H&D Corabrite boxes are smoother
and brighter than ordinary corrugated
boxes . . . yet cost no more.

Corabrite is perfect for your product.
Ask us, we'll show you.



HINDE & DAUCH

Subsidiary of West Virginia Pulp and Paper Company

AUTHORITY ON PACKAGING • SANDUSKY, OHIO
13 FACTORIES • 42 SALES OFFICES

making a
MARKED
IMPROVEMENT
in PAINT CAN MARKING



The problem of paper labels on cans becoming dirty and torn (and presenting a poor sales appearance on the retailer's shelf) plagued a typical paint manufacturer, until he began using the Markem Method. Now he's imprinting variable data (color, batch number, etc.) on 1500 lithographed cans per hour with a Markem 70AF machine. Changing imprint simply means sliding new type into the master-plate (instead of ordering 2000 new labels). Whether it's a container, product, part or tag you're marking—for decoration, designation or identification—ask Markem. Thousands have, for the past 40 years. Write Markem Machine Co., Keene 34, New Hampshire.



For More Information Circle No. 256
on Inquiry Card—Page 17

new
products

**Vapor Phase Inhibitor
Material is Hot-Sealed**

Orchard Paper Co., 3914-24 Union Blvd., St. Louis 15, Mo., has developed a vapor phase inhibitor material that is heat-sealable. It is a volatile rust inhibitor which is of interest to anyone now using automatic, heat-sealing machinery for packaging. The material is available in a 34" Kraft sheet coated with two grams of VPI per square foot. It is available in standard rolls 36" by 200 yards. It can also be supplied in narrower width rolls and in sheets.

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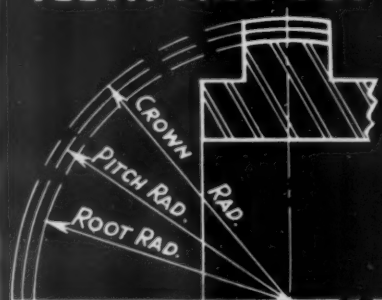
**Protect Against Power
Failure**



American Optical Company, Southbridge, Mass., announces a new Sentry-Lite with a battery that requires water once a year only. The #100X is a single lamp model covering an area of 5,000 square feet. A double lamp model is available under the Catalog #200X, which covers a 10,000 square-foot area. It also has a battery requiring water once a year only. The #100X and #200X Sentry-Lites are instant and automatic when power failure occurs during any emergency.

Circle No. 57 on Inquiry Card—Page 17

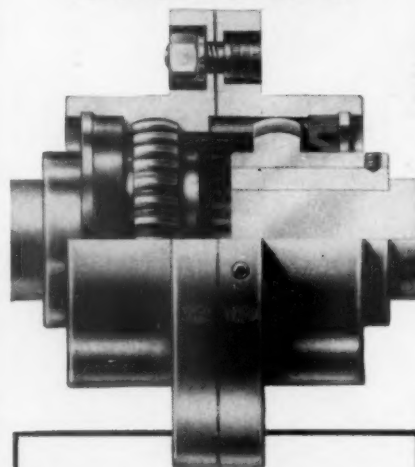
Here's the Big
DIFFERENCE
TEETH ARE CUT



ON A TRUE ARC

SPHEREFLEX®

COUPLING



SPHEREFLEX tooth design features an exclusive curved root and spherical tooth flank. Both angular and linear (parallel) misalignment are compensated for, since every portion of each gear tooth is actually a segment of a sphere. This special design eliminates all possibility of tooth interference and permits increased deflection between mating members. Full and uniform line contact, through the working depth of the tooth, insures a stronger coupling between driver and driven shafts; eliminates point rolling contact between gears during flexing; compensates for shaft misalignment up to 14° included angle.

**PHILADELPHIA
GEAR WORKS
INCORPORATED**

ERIE AVE. AND G ST., PHILADELPHIA 34, PA.
NEW YORK • PITTSBURGH • CHICAGO • HOUSTON • LYNCHBURG, VA.
BALTIMORE • CLEVELAND
Virginia Gear & Machine Corp., Lynchburg, Va.
Industrial Gears & Speed Reducers • Limit Torque Valve Controls
Established 1892

For More Information Circle No. 257
on Inquiry Card—Page 17

PURCHASING

The **BUY** word for Socket Cap Screws is **ALLEN**

The *easy* way to make sure of greater strength, better fit and uniform quality in socket cap screws is to order "not just Allen-type but genuine ALLEN."

PRESSUR-FORMING



The latest improvement in the cold forging method originated by Allen. The tough Allenoy steel fibers are preserved continuous and uncut.



New
LEADER
POINT

GRIP HEAD CAP SCREWS

The world's easiest starting, straightest driving, firmest holding cap screws.



New
LEADER
POINT

FLAT HEAD CAP SCREWS

For firm fastening with flush surfaces. Especially adapted to fastening thin plates and sheets.

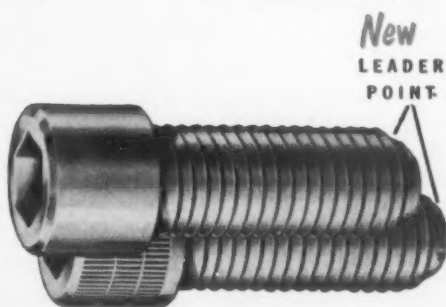


New
LEADER
POINT

BUTTON HEAD CAP SCREWS

Produces smooth streamlined appearance where counter-sinking is impractical.

STAINLESS STEEL



New
LEADER
POINT

Bright, non-corroding high tensile strength type 18-8. 151 popular sizes (NC & NF) with Smooth Heads available from stock. Also standard with Grip Heads in many popular sizes.

THE ALLENUT

Provides a ready-made threaded hole for use with cap screws in soft materials and for repair applications. Endless uses for compact design, space saving.



**Sold Only Through
Leading**

Industrial Distributors

Take advantage of their large stocks and fastener experience. Write direct for General Catalog G55.

ALLEN

MANUFACTURING COMPANY
Hartford 2, Connecticut, U.S.A.





The general office area at the new Canada Dry plant is a well-lighted, bright, working area. Comfortable chairs, modern and functional desks, and plenty of space improve the work flow and avoid a crowded look.

Teamwork in Buying for the Office

GOOD buying habits are as vital in purchasing for the office as they are in the plant. Take Canada Dry Ginger Ale, Inc., New York, and their buying of office furniture for their new plant in Maspeth, L. I.

Purchasing's part began long before the actual buying operation. It was part of a team that studied and planned so as to provide the best possible equipment, consistent with the company's needs, at the best possible price. It was, so to speak, in on the ground floor.

Once the building plans were set, a special group was formed to find out, in detail, what would be needed to equip the new office. Representatives were drawn from management, purchasing, and the control department (accounting). Their main objective, at that time, was to see that the

office was set to operate when the building was finished.

The early stages of discussion were mainly concerned with potential layouts, existing equipment, and types of work stations involved. On the last point, it was important to consider space locations on the basis of number of employees and their work classification (managerial, supervisory, clerical, stenographic, etc.).

Next came the development of a check list based on each work station. Here, the type of area (non-public, semi-public, public) had to be considered. Following that, the group then went into the actual type of basic work unit needed, desk or table. Once the basic unit was determined, additional equipment was discussed so as to be sure that the individual work station could function prop-

erly. Thus, the proper number and types of chairs had to be determined. Also, special equipment such as files and cabinets were considered.

Each work station was carefully considered in the light of its location, area requirements, type of area, and work load, etc.

Once these basic details were worked out, a proposed layout for each department was prepared. First, this showed only the major work units. However, after the layout had been formed to make the best use of the space available, miscellaneous equipment was added to provide a complete picture of the department. Smaller items such as waste baskets, coat racks, bookcases, etc., fell into that category. Then, as each department was completed, the tentative layout was sent to the department head for comment.

After working out this vital information, the group set up a budget. Using their list of needed items, they determined how much equipment already in use could be kept. The remaining items would have to be purchased. Thus, without considering any specific makes, but using the average market price of the items, the budget was made and submitted to top management.

After getting approval, the group went into a detailed study of each type of item needed. They set up standards and specifications for the equipment needed in order to handle the work load properly. There were matters of size and shape to consider. In desks, the number and kinds of drawers were important. Some desks needed file drawers, others did not. Also, on all equipment with drawers, the ease of drawer opening and manner of suspension had to be considered.

When it came to chairs, the

A separate, readily accessible file area eases the plant's filing problems. The neatly arranged, box-shaped section speeds filing and prevents congestion during reference work.

group totaled their needs in all types—upholstered, straight, posture, etc. For this equipment, factors of posture and adjustment were important. Files and cabinets had to be viewed according to work classification. Some would be standard types. Yet, the group also had to determine the number and location of Kardex and blueprint files. The same held true for cabinets, both storage and special types.

Next on the agenda was a trip to the new plant, which by now was nearly finished. Here, the group saw the actual physical area of the office and rechecked the proposed layouts.

From this point on, purchasing became the predominating factor, for now the actual buying operation began.

Using the specifications outlined by the planning team, and drawing on their previous experience and information, purchasing investigated the market. Sifting their data carefully, purchasing gradually narrowed the number of acceptable brands down to three.

Since all three basically met the needs outlined by the planning group, the matters of style and price were added to aid in final selection. Thus, three factors were used to determine the choice. First, the equipment had to do the job properly—handle the work load efficiently. Secondly, it had to be fairly priced. And finally, Canada Dry wanted a good clean style that would blend well with the decor of the new office.

This last point is not a minor one with the company. Canada Dry is well aware that an attractive place to work is important to employee morale. Also, a good looking office makes a favorable impression on visitors.

(Please turn to page 180)

JANUARY, 1956



For management, the same basic style of furniture is used as appears in the general office. Clean lines of the furniture and soft office coloring provide a quiet, restful atmosphere.

Individual work stations offer plenty of uncluttered space in which to handle the variety of record keeping tasks. Illumination on desk tops is of high quality, avoiding glare yet giving maximum brilliance for close figure work.



From the "Inner" Office to the "Outer" Office



there's a Peerless
model for every
office furniture need



From the inner office with its requirements of desks, tables, credenzas, chairs and accessories . . . for executive styling and conference utility . . . you'll find a complete line of models in the Peerless metal office furniture group.

To the outer office with its demand for style, operational ease and functional usage . . . you'll find that the complete Peerless line has the right desk, filing cabinet, counter unit and inserts to provide you with every office furniture unit.

Your Peerless Dealer is a good man to know. He offers you a complete office furniture counselling service . . . and that's good to know.



Filing Cabinets of distinction with styling and long-life built in every model. A complete line of 5, 4, 3 and 2-drawer models.



PEERLESS

STEEL EQUIPMENT CO.

6600 Hasbrook Ave., Philadelphia 11, Pa.
New York • Chicago • Dallas • Los Angeles

For More Information Circle No. 259 on Inquiry Card—Page 17

(Continued from page 179)

With all these factors as a guide, purchasing selected the brand they felt best filled the bill. This information was passed on to other interested departments for comment.

With the make selected, purchasing then used the actual price list to determine over-all costs. This, naturally, was checked against the original budget prepared by the planning committee.

There was one other problem, however. If Canada Dry were to buy direct, delivery scheduling would have to be worked out and arrangements made to set up the equipment as it arrived. Since the purchases represented a number of items, purchasing decided that a franchised dealer could provide the close supervision necessary for such routines. In addition, the dealer would have at Canada Dry's disposal additional service in the form of lay-out and decorating suggestions.

Dealer Takes Over

Thus, after checking the dealer's bid against the cost list prepared from the manufacturer's price list, the package was turned over to Itkin Brothers of New York.

Itkin Brothers' first task was to make a revised layout based on the equipment involved and on the layouts prepared by the planning group. This was checked by the committee and the final layout made.

From here on, the work was in the dealer's hands, with purchasing acting as a control. Delivery scheduling, set-up procedures, etc., were all arranged to conform with the needs of Canada Dry. When the big day for the plant opening came, the new equipment was set and the office ready to operate.

In thinking back over the project, Ralph A. Lombardo, assistant purchasing agent and member of the planning team, pointed out the careful steps used.

"First of all," he said, "We came into the picture right at the beginning as part of the planning group. Our management has long

(Please turn to page 184)

Silk Spun

Tagger

M & M

plenty copy

NU-KOTE

the most complete line of carbon papers and inked ribbons designed specifically to meet all applications of business machine operations.

Sharper originals, clearer copies and longer wear are just a few of the advantages received when you use M & V quality-controlled products.

M&V MEANS MORE VALUE



MITTAG & VOLGER INC., PARK RIDGE, N.J.

office equipment

and supplies

Midwest Lighting Products Co., Cleveland, is producing a new lamp for draftsmen which illumi-



nates the entire working area with 100 foot candles. Called Draft-o-Lamp, it gives shadowless light even on the corners of a drafting board. Four feet long, the lamp is designed to use two 40 watt fluorescent lamps. It is adjustable for height and clamps to the back of the drafting board. Shipping weight is 30 lbs.

Circle No. 58 on Inquiry Card—Page 17

Four new features have been announced by **Ditto, Inc., Chicago,** for its D-10 Direct Process duplicator. With a new margin adjustment, the master may be moved $\frac{1}{2}$ " up or down from its original position. Another feature is a three-digit reset counter. Also, the machine has been equipped with a nickel-plated fluid tank and a slotted drum for magnetic blockout work. According to the manufacturer, there has been no increase in price for the D-10.

Circle No. 59 on Inquiry Card—Page 17

A. B. Dick Co., Chicago, is marketing a new attachment for office duplicators to permit duplicating on eyelet tags used for labels. The attachment, a model 48 eyelet tag separator, assures accurate single feeding of tags. It fits on the feed table of Dick electric mimeographs and Azograph duplicators.

Circle No. 60 on Inquiry Card—Page 17



Five aluminum office chairs have been introduced by **Emeco Corp., Hanover, Pa.** They include an arm chair, a side chair, a swivel arm chair, a swivel steno chair, and an executive swivel arm chair. They form the nucleus of Emeco's "Wiltonaire Economy" line. All five models have a saddle seat and the back is pivoted, even on the side chairs. They are available in a variety of colors and combinations.

Circle No. 61 on Inquiry Card—Page 17

New low-cost, permanent or movable partitions are being introduced by **Unistrut Products**



Co., Chicago. Called Unistrut Partitions, they consist of patented Unistrut steel channel combined with standard paneling material—plywood, hardboard, pressed wood, plastics, wallboards, metal, glass, etc.—from $\frac{1}{8}$ " to $\frac{1}{2}$ " thickness.

Circle No. 62 on Inquiry Card—Page 17

A semi-automatic, electrically driven wheel for collating books, catalogs, inserts, etc., has been announced by **Johnson Research Corp., Bethpage, L.I.** It will hold up to 800 lbs of printed matter; sheets, folded sheets, signatures, or random sizes from 3" x 5" to 9" x 14". The speed of the machine is timed to give operators, working simultaneously around the wheel, ample time to perform the complete collating operation of pick-up, jog, and stack. Each operator can collate a 9" x 14", 112 page booklet in $1\frac{1}{2}$ minutes.

Circle No. 63 on Inquiry Card—Page 17
(Please turn to page 186)

ATTENTION ALL PURCHASING EXECUTIVES:

NEW Revised Edition Of This Famous Methods Manual Of Purchasing Is Just Off The Press!



**GET YOUR
FREE COPY
WITHOUT DELAY!**

The new up-to-date edition of this methods manual, which has been used by thousands of purchasing officials to develop more efficient, less costly methods, is now ready. It includes new case histories on the latest time-saving methods used by purchasing departments in leading companies. For example, one company reports in detail how improved follow-up control of its purchase

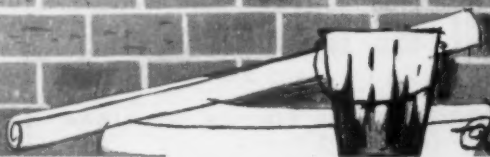
orders resulted in "an estimated office time saving of 80%!"

You simply can't afford to miss the valuable time and money-saving ideas in this new fully illustrated booklet. It demonstrates the record-keeping systems which relieve you of the burden of routine details... free you to meet the broader responsibilities of today's purchasing work.

Write Remington Rand, Room 1176, 315 Fourth Avenue, New York 10. Just ask for booklet X1202.

Remington Rand

DIVISION OF SPERRY RAND CORPORATION



Your Reception Room

is *YOU*
to Your Visitors



INDIVIDUAL CHAIRS ADD TO THE LOOK OF HOSPITALITY AND SUCCESS

First impressions are good—and lasting—when you compliment your visitors with the fine appearance and comfort of Harter chairs in your reception room.

With these chairs you can enhance the color scheme of your offices. You choose from a wide range of colors in leather, fabric or plastic upholsteries. For example, the C-1910 chairs are shown above in top grain leather. The Harter 710 pictured separately has rich fabric upholstery.

Metal finishes are durable baked-on enamel. Again you select the color either from the standard office finishes or from the new pastels which harmonize with the decorative tones in upholstery.

Top quality upholsteries and steel construction enable Harter chairs to keep their like-new appearance for years and years. They're a sound business investment that says nice things about you to your visitors.

Write for literature on Harter chairs... we'll send name of your nearest dealer.



Model 710



HARTER POSTURE CHAIRS

STURGIS, MICHIGAN

HARTER CORPORATION, 129 Prairie Street, Sturgis, Michigan

In Canada: Harter Metal Furniture Ltd., Guelph, Ontario

For More Information Circle No. 262 on Inquiry Card—Page 17

(Continued from page 180)

recognized the value of purchasing as a counselling service in planning, in addition to its ability to render good buying and other purchasing functions. Thus, as part of the group, we could contribute to the study of the job, how to solve it, and the steps to take in doing just that. In the buying operation, we followed the basic principles of purchasing, just as we would for any other commodity. And, when we were finished, we had an attractive, functional office at a sound price."

Spirit Duplicating OK'd For Federal Tax Returns

A new ruling by the Internal Revenue Service approves the preparation of federal income tax returns by spirit duplicating. The IRS ruling applies to both official as well as supplemental schedules.

The new application should be valuable to accounting firms which need multiple copies of tax returns for individuals and firms. The method eliminates rewriting and rechecking of official tax forms.

For the new method, official tax forms are provided in pads of single sheets by Nelco Tax Forms, Green Bay, Wis. The same pad can be used for making the original master and subsequent copies.

To make the master, a sheet of carbon is placed face up under the top sheet of the pad. Entries are made, using a pencil, ball-point pen, or typewriter and are thus impressed on the reverse side of the sheet by the carbon.

After the master is completed and checked for accuracy, it is placed on the duplicator, and copies run on sheets torn from the pad. Signatures are affixed after the copies are run. If necessary, the master can be refiled for use at a later date.

FOR MORE INFORMATION
ON PRODUCTS IN THIS ISSUE
PLEASE USE
INQUIRY CARD—PAGE 17



***"National Accounting Machines save us 63%
a year on our investment!"***

PHILLIPS-JONES CORPORATION, New York, N. Y.
"One of the World's Largest Men's Wear Manufacturers"

"In a highly competitive business like ours, we must maintain a constant watch on costs. Only by keeping costs at a minimum can we continue to produce such quality products as our famous 'Van Heusen Century Shirt' at popular prices.

"Our National Accounting Machines, purchased in the interests of cost-cutting efficiency, save us 63% a year on our investment.

"We use our Nationals for a wide variety of accounting jobs—including Accounts

Payable and Distribution, Payrolls, Quarterly Social Security Reports and W-2s.

"Flexible, easy to operate, our Nationals take up less space and turn out more work in less time than our previous equipment. We are so pleased with their excellent performance that we are adding more Nationals to our present installation."

Seymour J. Phillips
President

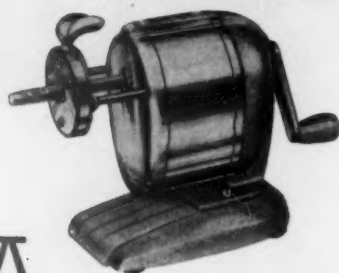
THE NATIONAL CASH REGISTER COMPANY, DAYTON 9, OHIO
977 OFFICES IN 94 COUNTRIES

For More Information Circle No. 263 on Inquiry Card—Page 17

In your business, too, National machines will pay for themselves with the money they save, then continue savings as annual profit. Your nearby National man will gladly show how much you can save—and why your operators will be happier. (See yellow pages of your phone book, or write to us at Dayton 9, Ohio.)



END 'SHARPENER SEARCH'
IN MODERN STEEL OFFICES



A BOSTON CHAMPION

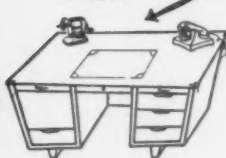
Office managers and employees alike "go for" the efficiency of this handsome rugged portable that won't scratch even modern steel furniture. Easy to operate—guaranteed one year—the Champion ends time-wasting "sharpener searches." The Boston Stop eliminates pencil waste—Speed Cutters assure clean, sharp points—and true-center feed gives true points every time.

Specify a Boston Champion Portable as standard equipment for every modern desk. Order from your stationery store.

C. HOWARD HUNT PEN CO. *Makers of BOSTON and SPEEDBALL products*
Camden 1, N.J.

For More Information Circle No. 264 on Inquiry Card—Page 17

PORTABLE
ON EVERY DESK



Not with TICONDEROGA

Fingers won't cramp or tire even after long sessions with a Dixon Ticonderoga pencil. No finger fatigue common with other writing instruments. Prove it to yourself. Try Ticonderoga—it's *Leadfast*.

TICONDEROGA

THE JOSEPH DIXON CRUCIBLE CO.
Pencil Sales Division, 8-J-1 Jersey City 3, N.J.

For More Information Circle No. 265
on Inquiry Card—Page 17

Save money on business cards

Buy your cards the easy Coupon Order way. Get high quality Hill thermographed business cards, and save money on your purchase orders. One purchase order gets you a book of coupons—good for cards. You check one invoice—pay one bill.

Get full information on Hill's Coupon Order Plan. Write today. Send your card. Tell us, please, how many cards you buy a year. We'll mail free folder.

If it's worth seeing, put it on a Hill.

R. O. H. HILL, INC.

270 N25 Lafayette St., N.Y. 12, N.Y.

For More Information Circle No. 266
on Inquiry Card—Page 17

office equipment

Steel storage cabinets suited for safe storage and immediate accessibility of inventory records, account books, ledgers, order forms, etc., have been introduced by Standard Pressed Steel Co., Jenkintown, Pa. Adjustable



shelves can be placed as close as 4" apart to allow installation of as many as 16 shelves in a standard 6½' cabinet. The Hollowell cabinets come in four general types. The double-door model can be set up as a storage cabinet, wardrobe or combination of both. It is 6½' high. The single door model is available with the same variations as the double-door. There are desk-high cabinets, the top of the cabinet usable as additional desk space. Counter-high cabinets are for use as a service counter with built-in, lockable storage space. Standard colors are SPS green or gray. All painted surfaces are phosphate undercoated to improve paint adhesion.

Circle No. 64 on Inquiry Card—Page 17

Inter-company correspondence
—New technique, called "Foto-Notes," using Remington Rand's Transcopy unit is fully explained. Available from Remington Rand Division, Sperry Rand Corp., 315 Fourth Ave., New York 10, N. Y.

Circle No. 65 on Inquiry Card—Page 17

Methods Research Corp., Staten Island, N.Y., is marketing a new **visual control board**. Called the **Magne-trol**, it consists of a mag-



netic steel board which holds visual elements to its surface. Standard size of the board is 24" x 36", special sizes built when needed. It is finished in office grey and is framed in polished aluminum.

Circle No. 66 on Inquiry Card—Page 17

A new sensitized metal plate has been announced by **Colitho Division, Columbia Ribbon and Carbon Mfg. Co., Inc., Glen Cove, L.I.** The plate is prepared with a transparent film positive, such as produced on xerographic equipment. It is claimed that the entire process eliminates the time and money consuming preparation of a film negative. Repeated field tests have shown that time from copy on xerographic camera to developed offset plate on press runs less than 20 minutes, while cost is reduced by a minimum of 50%. The plate is now available in all popular duplicating sizes and punchings.

Circle No. 67 on Inquiry Card—Page 17



A new model dictating machine has been announced by **American Dictating Machine Co., Inc., New York.** Known as the model **TN 3**, the **Rex Recorder** has an input volume control which permits use of the machine in all locations, regardless of noise interference. The machine magnetically records on a disc. Also, it uses a roll of index slips which pull through and tear off to control letter end and correction work.

Circle No. 68 on Inquiry Card—Page 17

How many of your profit dollars go here?



Test these Webster Quality Products



Carbon Papers



Silk Typewriter Ribbons



Carbon Paper Ribbons



Tabulating Ribbons

The dollars you save on office procedure are true profit. There are no deductions for travel, entertainment or delivery costs. If you save a thousand dollars, you have made a thousand dollars.

But you lose these profit dollars when second-rate, undependable office supplies fill your wastebasket with illegible copies, smudged letters, work that has to be re-typed and ribbons and carbons that failed to stand up after short use.

Webster products help prevent this waste ...help you save money on office typing. This quality line of carbon papers, typewriter ribbons and spirit duplicating supplies is manufactured to exacting formulas that give you longer, better service. Every Webster product is inspected many times during the making.

Webster Quality Products make for office efficiency which means a substantial saving in expenses. Try the Webster line for a few weeks. Your empty wastebasket — and your cost records — will illustrate the difference.

F. S. WEBSTER COMPANY

7 Amherst Street
Cambridge 42, Massachusetts

For More Information Circle No. 267 on Inquiry Card—Page 17



MR. CARL R. SCHMIDT, President of the Schmidt Lithograph Company, San Francisco.

"The success of our business", points out Mr. Schmidt, "is based on giving the best possible lithography at the best possible value. Experience has taught us that the cost of using quality papers, inks, machines and craftsmanship is negligible compared with the superiority of the finished product."

FOR EXAMPLE: Your business stationery. Surveys by the National Stationers' and Office Equipment Association show that the paper constituting the average letterhead, envelope and file copy costs less than a postage stamp. This microscopic cost rises less than 1% of total correspondence costs when you entrust your letters—your personal representatives—to the highest-quality, most impressive, rag-content letter paper obtainable: ADVANCE BOND.

ANOTHER EXAMPLE: Your business records. Record paper averages but 1% of total accounting costs. This minute cost increases less than 1% when you select the most durable, permanent record paper made: L. L. BROWN'S LINEN LEDGER.

Thus at practically no extra cost, you can be sure of prestige-enhancing stationery and dependable records regardless of time and hard use. These plus values have characterized L. L. Brown papers for 106 years.

Your regular supplier of stationery and records is well versed in the various L. L. Brown papers. He will gladly recommend those best suited to your particular requirements. L. L. Brown Paper Company, Adams, Mass.

L. L. BROWN
LETTER & RECORD
PAPERS
"SO MUCH extra value
FOR SO LITTLE extra cost"
Since 1849

For More Information Circle No. 268
on Inquiry Card—Page 17

office equipment



The Heyer Corp., Chicago, has introduced a new cabinet for duplicating machines. Called the "Trend," it has ample storage space for duplicating supplies. The finish is alcohol resistant and is not affected by spirit fluid or

mimeograph inks. Because of its styling, it may also be used for any number of other tasks. The "Trend" stands 30½" high on 6" adjustable legs. It is 31" wide and 16" deep. The cabinet is finished in dark gray. Metal doors have gray walnut, wood grained finish and slide on nylon rollers. The inside shelf is adjustable.

Circle No. 69 on Inquiry Card—Page 17

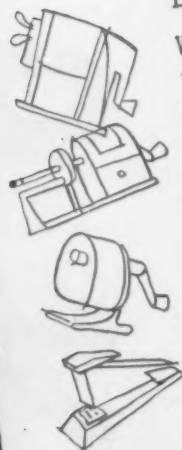
Three new covers have been added to the line of Amberg File & Index Co., Kankakee, Ill. No. 515 Brief Cover is standard 8½" x 11" sheet size. It comes in light blue, grey, tan, ivory, and goldenrod. No. 567 for 8½" x 11" sheets is called Proposal and Presentation Cover Set. This cover is top-hide grade, with die cut window opening for titles, and comes with bond paper title sheet and acetate covered black paper mounts. Colors are blue, green, black, maroon and brown. No. 587 Proposal Cover Set is the same as No. 567, but in Pacific grade at a lower price. It is available in 10 colors—maroon, black, dark blue, light blue, brown, orange, red, green, grey, and tan.

Circle No. 70 on Inquiry Card—Page 17

MEMO

Bill:

When we move to the new building, I'm counting on you to see that we have an adequate installation of APSCO pencil sharpeners. Get plenty of APSCO staplers, too... JB



ApSCO—America's Choice!
office

ApSCO

ApSCO products inc.

Los Angeles, Calif.—Rockford, Ill.—Toronto, Canada

For More Information Circle No. 269 on Inquiry Card—Page 17

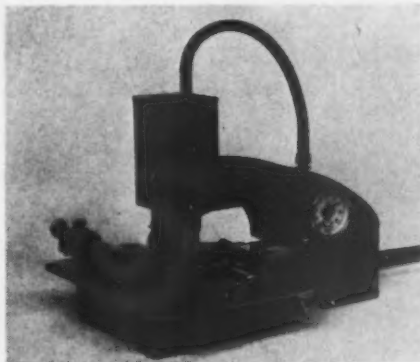


Standard Register Co., Dayton, has introduced a new line finder. Called the **Electric Automatic Line Finder**, it makes it possible to instantaneously advance the unused area of a form on a typewriter or bookkeeping machine in one operation. The movement to the next line is by the touch, or automatic operation, of a key. It is designed to advance a form any pre-determined number of lines in one operation.

Circle No. 71 on Inquiry Card—Page 17

An improved paper for the Verifax Copier is being marketed by **Eastman Kodak Co., Rochester.** Known as **Verifax Copy Paper**, it nearly doubles copies available from a single matrix and cuts costs to 2½ cents per copy.

Circle No. 72 on Inquiry Card—Page 17



An air operated numbering machine for automatically printing numbers on cards, labels, folded containers, carbon forms, etc., has been introduced by **Roberts Numbering Machine Co., Brooklyn.** Settings are made by turning a control knob and operating pressure is seen on an indicator dial. Throat depth is 6", platform width is 9½". Machine is furnished with a precision built interchangeable numbering head to automatically number from 1 to 999,999. It can be set for consecutive, duplicate or repeat operations. It operates on 50 to 100 lbs. air line pressure.

Circle No. 73 on Inquiry Card—Page 17

THE PEN THAT FILLS ITSELF

Esterbrook

Always



MODEL 444 DESK SET
for the general office and public counters.

Ready



MODEL 4410 DESK SET
colored Permalite bases for that "important" look.

to Write



MODEL 4430 DESK SET
with onyx or carrara bases that say, "boss man".



CHOOSE THE RIGHT POINT
for the way you write—by number. More than 30 point styles.

The Esterbrook Desk Pen fills itself instantly—every time you return the pen to its socket. The base holds 40 times more ink than an ordinary fountain pen. Needs no attention for months on end. Try one on your desk for 30 days. Your money refunded if you are not completely satisfied.

THE ESTERBROOK PEN COMPANY, CAMDEN 1, NEW JERSEY

The Esterbrook Pen Company of Canada, Ltd., 92 Fleet Street, East, Toronto, Ontario

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For More Information Circle No. 270 on Inquiry Card—Page 17

Announcing...

for the future in the grinding wheel industry.



A NEW ELECTRONIC PROCESS

Bay State Grinding Wheel Formulas are now computed **AUTOMATICALLY!**

ELECTRONIC FORMULATION

means this for you:

★ GREATER ACCURACY IN ENGINEERING.

The ELECTRONIC FORMULATION system precisely spaces every interval between grade and structure changes equally along a perfect progression. This gives the Bay State abrasive engineer the industry's most accurate measuring device for recommending wheel specifications that will fit your job best.

★ GREATER ACCURACY IN MANUFACTURING

Electronic precision replaces the possibilities of human error in figuring formulas which control the manufacture of every Bay State wheel. This precision makes sure you get the special grinding qualities determined best for your job.

★ GREATER ACCURACY IN DUPLICATION.

Formulas for every Bay State grinding wheel are preserved on punched cards for electronic computers. This insures absolute accuracy in duplicating wheel formulation, with **FASTER ORDER PROCESSING.**

★ ★ ★

Truly "Wheels of Progress" in action, the ELECTRONIC FORMULATION system is an exclusive BAY STATE development. Its many advantages are yours when you call your BAY STATE DISTRIBUTOR, or factory representative, for complete "on-the-job" engineering service.

BAY STATE ABRASIVE PRODUCTS CO., Westboro, Mass., U.S.A.

Branch Offices and Warehouses —

Bristol, Conn.; Chicago, Ill.;
Cleveland, Ohio; Detroit, Mich.; Pittsburgh, Pa.

Distributors — All principal cities

In Canada:

Bay State Abrasive Products Co. (Canada) Ltd., Brantford, Ont.

Manufacturers of all types of Quality Abrasive Products



association news

More Value for the Tax Dollar

CELEBRATING a decade of effort to help improve the supply functions of government and thus further economy in government operations, more than 1500 public purchasing executives met at the Shoreham Hotel, Washington, D.C., in October. The occasion was the 10th Annual Conference and Products Exhibit of the National Institute of Governmental Purchasing.


In commenting on the occasion in his annual report, Bernard L. Gill, 1954-55 president of NIGP and city purchasing agent, Madison, Wis., said, "There is no better way of judging the future than by the past. Using our past decade of accomplishment as a measuring rod, we may safely predict fruitful years ahead. I am reminded that all our optimism concerning our past and our future depends upon our fidelity to the motto on that silver tax dollar: 'In God We Trust'."



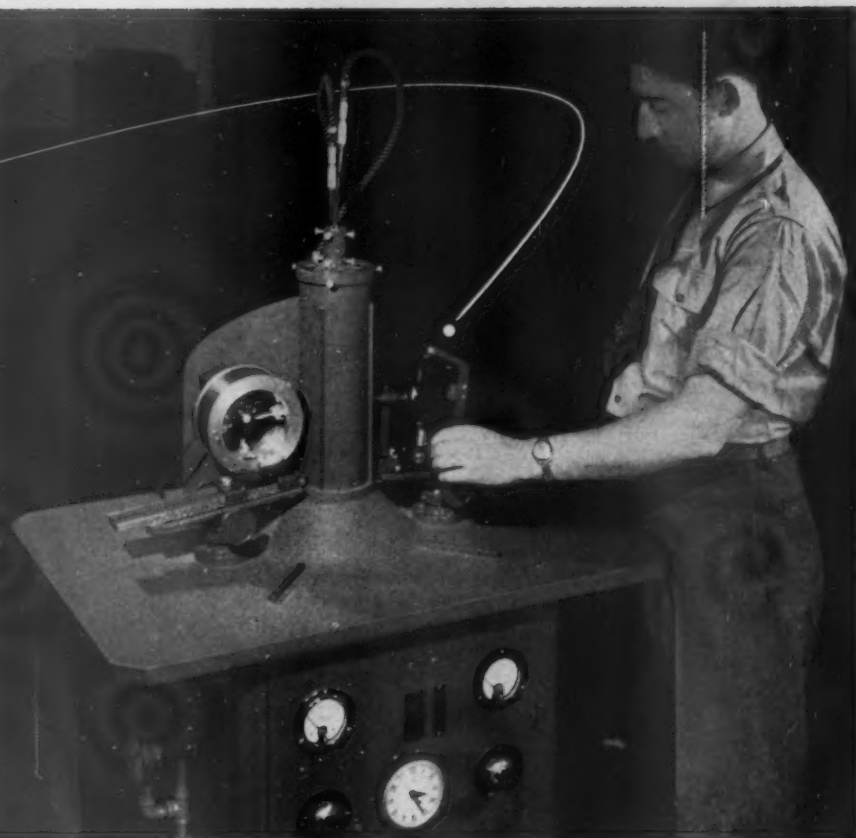
John Krieg, city purchasing agent of Cincinnati, (front, left) was elected president for 1955-56 of the National Institute of Governmental Purchasing. He succeeds B. L. Gill, city purchasing agent of Madison, Wis., (right). At the rear are John W. Huffman, vice president; Albert H. Hall, executive vice president; and O. Grant Brush, treasurer. The remaining vice president, Joseph V. Spagna, was not present at the picture taking.

Past presidents of NIGP: (kneeling) Alvin J. Holm, 1944-45; Maurice G. Postley, 1945-46; Albert Pleydell, 1946-47; Joseph W. Nicholson, 1948-49. Standing: John F. Ward, 1949-50; Michael M. Donohue, 1950-51; Arthur B. Gathright, 1951-52; Leo Weil, 1952-53; C. L. Magnuson, 1953-54; and B. L. Gill, 1954-55.

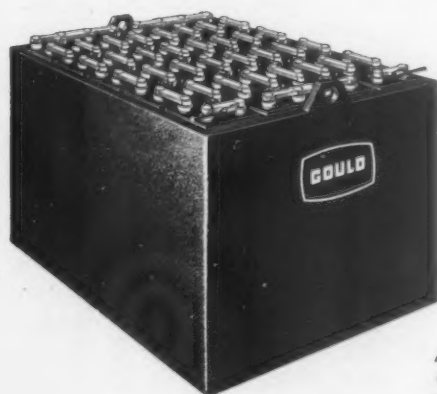




**WE MEASURE
DISTANCES
BETWEEN
ATOMS...**



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The X-Ray Diffraction Unit shown above is one of the few instruments of its kind being used in basic battery research. It identifies complex metallic compounds which cannot be identified practically by chemical means. It does this by actually indicating on film the distances between atoms, enabling Gould engineers to study atomic structure.

This instrument . . . this research . . . is revealing hitherto unknown facts about the relationship between molecular activity and battery performance . . . pointing the way toward more powerful, longer lasting active materials. That's why you get *better* batteries when you buy Gould!

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"BETTER BATTERIES THROUGH RESEARCH"

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"Testing Public Purchases" was the theme of a talk and discussion session by Holcomb York, president of York Research Corp., Stamford, Conn.

Vice Admiral Murrey L. Royar outlined the operations of the Office of Naval Material at one of the conference's luncheons.



Commander H. Blackman discusses a few points with Albert Hall, executive vice president, and B. L. Gill, NIGP president for 1954-55, before a luncheon meeting.



B. L. Gill is awarded the retiring president's gavel by C. L. Magnuson, immediate past president.

Long noted for the smooth running of their conferences, the NIGP delegates had one change in their planned program. Holcomb York, president of York Research Corp., Stamford, Conn., was stranded by flood waters in his area and could not make his scheduled appearance at the opening session. However, Mr. York appeared before the close of the conference and explained his company's efforts in testing many products. One of the liveliest parts of this was a question and answer period devoted to problems of testing traffic paint.

At the first luncheon meeting, a letter of greeting from the Vice President of the United States was read to the group. Mr. Nixon, writing on behalf of President Eisenhower said, "A sustained drive to eliminate waste and acquire the fullest possible value for the tax dollar is important to every taxpayer. Purchasing executives can do much to continue and extend such a drive."

The main speaker at the luncheon was Bennett S. Chapple, Jr., assistant executive vice president, United States Steel Corp.

Mr. Chapple predicted that in 1956 the United States will produce \$400 billion worth of goods and services for an all-time record. He forecast a probable complete flattening out of the upward curve in business during the sec-

ond half of the year. He also pointed out that optimistic predictions might have to be revised if adverse conditions develop in three elements of the economy: (1) credit; (2) inventories, and (3) loss of confidence by the public and businessmen.

Following the luncheon, a discussion type session was held with A. T. Crutchfield, city purchasing agent, Durham, N.C., presiding. Entitled "Public Purchasing Problems", the session, under the leadership of Wade H. Hannah, city purchasing agent, Columbia, S.C., was mainly devoted to discussing matters such as placing restrictions on hours for interviewing salesmen.

The following day, the conference got underway with a series of special breakfast sessions aimed at specific problems. Educational buyers and purchasing men from various sized communities met in these special groups to discuss problems peculiar to their offices.

Later, Wade Hannah again lead a discussion group in a continuation of the previous day's session on public purchasing problems.

Once again the conference delegates were treated to a top-rated speaker at luncheon. In this case it was Vice Admiral Murrey L. Royar, chief of naval material. He outlined the important purchasing steps followed by the rel-

(Please turn to page 210)



MORE COPPER IS COMING

Never before has peacetime copper output been so great.

In 1955 alone, free world refined production totalled an estimated 2,732,997 tons. Yet even today's record tonnages will be exceeded as new copper mines swing into full production and existing properties expand operations.

On the African continent, substantially increased production is expected from Bancroft, Chibuluma, and Kilembe.

In South America, expansion at El Teniente, Chuquibambilla and La Africana, has been announced. Under development are Cuajone, Toquepela, Quellevaco, and Indio Muerto.

In the United States (already the world's largest producer), San Manuel, Butte, Tripp, White Pine, Osceola,

and Pima mines are headed for greater output.

Canada will add more production at Gaspé, Campbell Chibougamau and Opemiska. Many new properties are being developed. Substantial future output is expected from Brunswick, Geco, Granduc and Canam, to mention only a few of these new projects.

The copper industry has the capacity to produce copper faster than ever.

From known deposits . . . from mines now under development and from ore bodies now being explored . . . more copper is on the way. For particulars, write today to Copper and Brass Research Association, 420 Lexington Avenue, New York 17, New York.

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resistance



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commercial metals



Easy to machine,
form, draw, stamp,
polish, plate, etc.



Welds readily . . .
Excellent for
soldering and brazing



For More Information Circle No. 273 on Inquiry Card—Page 17

association news

"Going Forward With New England" Theme Of District 9 Conference

One of the best attended New England Purchasing Conferences was held on November 1 at the Sheraton-Kimball Hotel, Springfield, Mass. The one-day meeting was sponsored by the Purchasing Agents Associations of Connecticut, Western Massachusetts, Rhode Island, and New England.

Theme of the District 9 conference was "Going Ahead With New England."

The morning session opened with a report on the affairs of District 9 by H. Stafford Kellam, General Electric Company, national vice-president for the district. Elmer Schwartz, president, Northeastern Steel Corporation, Bridgeport spoke on "A steel Mill for New England." Harlan E. Cross, vice chairman of the committee on standardization, National Association of Purchasing Agents, gave a talk on "Standardization—A Means of Added Profit."

"Sales Training As A Part of



Program Chairman Joe Milner greets Monsanto's John L. Gillis.

Purchasing" was the subject of an address by S. D. Chamberlain, The Kendall Company, past president of the National Society of Sales Training Executives. Mr. Chamberlain stressed the opportunities that both buyers and sellers have to broaden the scope of their own jobs by knowing and understanding the other's. He called for more cooperation in the exchange of ideas among the two groups.

Wilfred I. Hanford, national director of the Connecticut Associa-



P. J. "Pete" Clarke takes a "New Look at Education in Purchasing."

tion presided at the morning session.

A vivid picture of how the electronics industry has and will affect New England's economy was painted by Julian K. Sprague, president of the Sprague Electric Company, whose address opened the afternoon session. Mr. Sprague described how the electronics industry in the area had grown with every technological advance in modern industry. He declared that New England initiative and dependability, linked with a highly skilled and intelligent labor force, would maintain the area's leadership in the manufacture of electronic components.

Purchasing Education

P. J. Clarke, Rohm & Haas Company, recently named to head the N.A.P.A. committee on education, spoke on "A New Look at Education in Purchasing." Asking a rhetorical question why so many men had done so much for purchasing education, Mr. Clarke said it was motivated by three things. They were: pure selfishness, which

(Please turn to page 204)



General Chairman Carl Tootill, right, and Publicity Chairman Charlie Healey at the registration booth.



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can make your
small precision metal parts
faster, better and for **less**

*than you can make them
or buy them elsewhere*

These are typical of parts that Torrington produces daily by the hundreds or millions. If you use similar small precision parts, mail the coupon today for the Torrington Small Precision Parts condensed catalog. Even better, send a sketch, blueprint or sample part. We will give you a prompt quotation which will mean substantial savings to you.



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RUST-PROOFED . . . by zinc plating, Darnell Casters give longer, care-free life wherever water, steam and corroding chemicals are freely used.



STRING GUARDS . . . Even though string and ravelings may wind around the hub, these string guards insure easy rolling at all times.



LUBRICATION . . . all swivel and wheel bearings are factory packed with a high quality grease that "stands up" under attack by heat and water. Quick grease-gun lubrication provides easy maintenance.



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Kentucky Governor Stresses Importance of Purchasing At State Buying Officials' Meeting

Thirty six states and Puerto Rico were represented at the annual meeting of the National Association of State Purchasing Officials, held October 25-28 in Louisville, Kentucky. The host state's chief executive, Governor Lawrence W. Wetherby, stressed the importance of an efficient purchasing division in the operation of a state government.

"The purchasing division" he said, "can get a Governor into more hot water than any other group. Conversely, it can keep him out of more trouble than any other agency in state government."

Following the report of retiring President J. Stanley Bien, at the opening session, William E. Stevenson of Minnesota, gave a report of the committee on Standardization of Specifications. James N. Constantine, U. S. Department of Agriculture, then spoke on "Uniform Meat Specifications."

The afternoon session was devoted to a discussion of proposed revisions to "Purchasing by the States." Frank Free of Vermont was discussion leader.

Two general discussions were featured at the morning meeting on Wednesday, October 26. The

first, "Vendors' Errors and Failures to Deliver" covered the following points: adjustments of vendors' mistakes in bids; vendors' responsibility when they have made erroneous bids; withdrawal of bids after opening but before order is placed; cancellation of order on discovery of obvious error after order is placed; penalties for non-delivery or non-performance; modification of bids prior to opening; and policy as to deadline for acceptance of bids. Discussion leader was Alice E. Miller, of Texas.

Willis Holding, Jr., North Carolina, led a discussion on, "Should the practice of state purchasing departments buying for the state's political subdivisions be encouraged or discouraged?"

On Thursday, discussion covered "Laws, Rules, or Regulations that: 1. Establish the dollar limit of purchases that agencies may make direct without individual and specific authority of your department. 2. Establish specific commodities and services that agencies are permitted to purchase without submitting requisitions to your office. 3. Establish sources from whom purchases may be made direct by

(Please turn to page 200)



New members of the executive committee of the National Association of State Purchasing Officials following their annual meeting at Louisville. Left to right: William E. Clarkson, Indiana; Charles A. Byrley, Kentucky; J. Stanley Bien, Michigan, retiring president; C. L. Magnuson, Connecticut, president; J. B. King, Alabama, vice-president; Kenneth S. Easton, Nevada; P. T. Peterson, Minnesota.

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PURCHASING

modern design specifies stainless steel

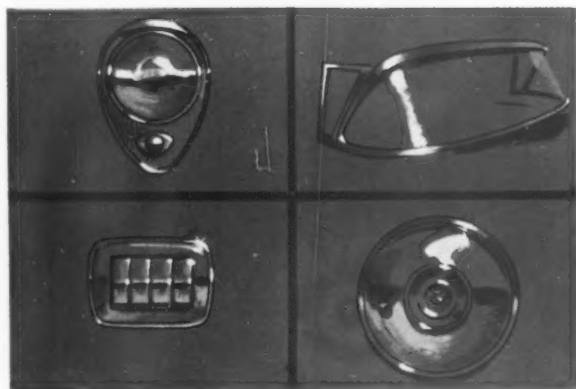


McLouth STAINLESS Steel

for automobiles

The beautiful bright molding and trim that style your car are made of non-corrosive, easy to clean Stainless Steel. Designers of automobiles and hundreds of other products specify Stainless Steel for its many valuable properties.

For the product you make today and the product you plan for tomorrow specify McLouth high quality sheet and strip Stainless Steel.



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MANUFACTURERS OF STAINLESS AND CARBON STEELS

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Wraps Up Your Packages
Securely, Efficiently,
Economically.



Applies Speedily



Grips Tightly



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Detroit Association Activities



A visit to the main plant of the Burroughs Corporation was the highlight of a recent joint meeting of the Detroit Association and its Canadian neighbor, the Essex-Kent Association.

November of 1955 was an important month for the Purchasing Agents' Association of Detroit. The new Professional Development series was started on the third of November with a well attended meeting on "Standardization." John Hall of The Ford Motor Company Manufacturing Division gave a thought-provoking talk and this was followed by group discussions.

On the afternoon of the 17th, a plant visitation was made at the main plant of The Burroughs Corporation. This was the start of a third annual joint international meeting with the Essex-Kent Association of Canada. Russell T. Stark, First Vice-president of The Detroit Association and Director of Purchases of Burroughs Corporation arranged this interesting visit.

A social hour was held at the Hotel Fort Shelby followed by the regular monthly meeting. Interesting member commodity reports on Fuel, Non-Ferrous Metals, and Steel preceded the main address.

Captain William Mott, USN now serving as Assistant Chief of staff for the Commandant of The Ninth Naval District gave a very timely talk on "Negotiating With The Russians."

A second meeting of the Professional Development series was



Captain William Mott, USN

held December 1 at the Detroit Edison Auditorium with Standardization again holding the spotlight.

(Continued from page 198)
agencies without submitting requisitions to your office. 4. Establish emergency purchases which may be made direct by agencies without securing prior authority from your office. 5. Establish authority for direct purchases by agencies similar in nature to those above.

C. L. Magnuson, Connecticut, was the discussion leader.

Nelson J. Gibbins, Methods and Purchasing Engineer, Motor Wheel Corporation was special guest at the Friday morning session.

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...call BRIDGEPORT for service!

Need fast delivery of aluminum extrusions to complete that job on schedule?

Bridgeport is set up to meet your demands! A phone call will put all our resources behind that special job—or any number of them—to deliver the shapes you want... when you want them.

No limits or short-cuts on quality, either! With over 800,000 sq. ft. of modern production facilities, Bridgeport can extrude a wide variety of standard or specially designed shapes in any extrudable alloy... to close tolerances... and to meet your exact requirements.

Bridgeport flexibility is the answer! We have the capacity of the large producer... the flexibility of the small one. Our customers enjoy the benefits of both.

Take advantage of this important service benefit and Bridgeport's 90-year reputation for quality in metals. Join the growing number of aluminum fabricators who use Bridgeport as a steady, dependable source of supply for extrusions.

Keep Bridgeport in mind, too, for die, contour and hand forgings. There's a Bridgeport Sales Office near you with information on our personalized service and fast delivery. Call us today.

Take advantage of Bridgeport's aluminum extrusions within these general limits:

Length—

Max.—Heat-Treatable Alloys 40 ft.
Max.—Aged 635-T6 40 ft.

Weight per ft.—

Max.—50 lbs.
Min.—.250 lb.

Max. circumscribing circle — 16 in.

- Bridgeport has two large tool and die shops fully equipped for making all extrusion and forging dies.
- Complete facilities are available for mechanical, chemical and sonic testing of aluminum.



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DESIGN ENGINEERS CAN'T BE WRONG

In 1,960 separate applications these men specified **IPC** packings

In the short space of 11 months, January-November 1955, IPC packings were specified for 1,960 varying applications. From a simple water pump to a highly complex retainer seal for an automatic transmission, IPC leather and synthetic packings met every design requirement!

IPC's engineering and laboratory staff analyzed all factors . . . carefully developed compounds and designed seals for each application. This is the attention to detail that ensures better packings . . . better performance.

Whatever your problem — specify IPC.



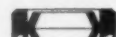
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For More Information Circle No. 280 on Inquiry Card—Page 17

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1. Bonded Washer Seal
Double Lip Wiper



2. Bonded Case Seal
Double Lip Wiper



3. Bonded Washer Seal
Straight Lip



4. Bonded Washer Seal
Limited Contact Lip



5. Bonded Washer Seal
Straight Lip
With Garter Spring



6. Bonded Washer Seal
Limited Contact Lip
With Garter Spring



7. Bonded Case Seal
Straight Lip



8. Bonded Case Seal
Limited Contact Lip



9. Bonded Case Seal
Straight Lip
With Garter Spring



10. Bonded Case Seal
Limited Contact Lip
With Garter Spring



11. Bonded Case Seal
Straight Lip
Thin Ring Type



12. Bonded Case Seal
Limited Contact Lip
Thin Ring Type



13. Rubber Covered
Bonded Case Seal
Straight Lip



14. Rubber Covered
Bonded Case Seal
Limited Contact Lip

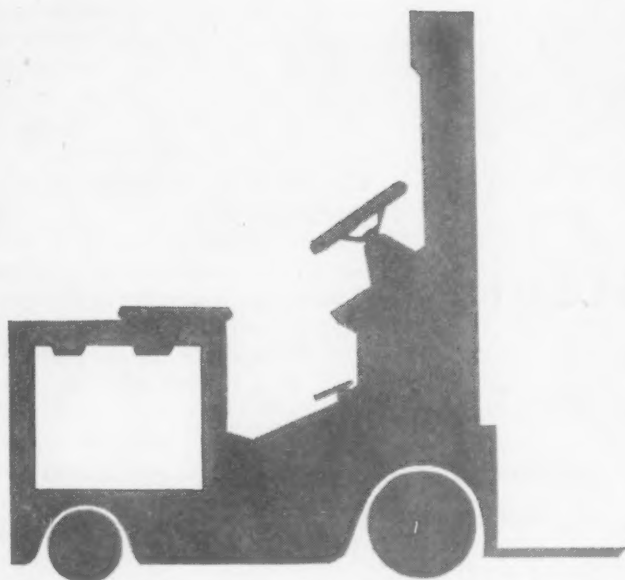


15. Rubber Covered Bonded
Case Seal Straight Lip
With Garter Spring

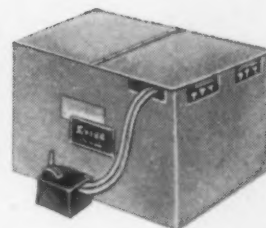
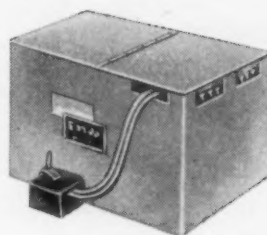
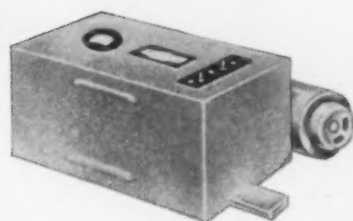


16. Rubber Covered Bonded
Case Seal Limited Contact Lip
With Garter Spring

NOW! Initial cost of electric industrial trucks cut drastically by unique new Exide® Plan



Buy only the truck chassis!



Lease batteries and charger!

Get superior electric truck operation!

Exide's new plan enables you to enjoy the efficiency and economy of electric fork and lift trucks, with relatively low cash outlay.

To reduce the initial cost of a complete electric-truck work package (truck chassis, batteries, charger), and to prove that you can operate Exide-powered electric trucks at substantially lower costs than trucks powered by other means, Exide offers this unique, money-saving plan:

1. You *buy* only the electric truck chassis.

2. You *lease* the Exide-Ironclad batteries and charger. (Terms are flexible to meet your needs and surprisingly low!)

Result: Your initial capital outlay can be cut as much as 33⅓%, whether you purchase one electric truck or a fleet! You pay for superior Exide power *as you use it*.

With one electric truck, for example, you can save as much as \$1425 per year. These savings are made possible by longer working life of the truck, lower power costs, lower repair and maintenance costs.

Make us prove these savings in your plant! Call your Exide sales engineer. Ask your electric-truck salesman. Send the coupon for all the facts!

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Send me complete details about the new Exide Plan for cutting initial cash outlay on electric industrial trucks.

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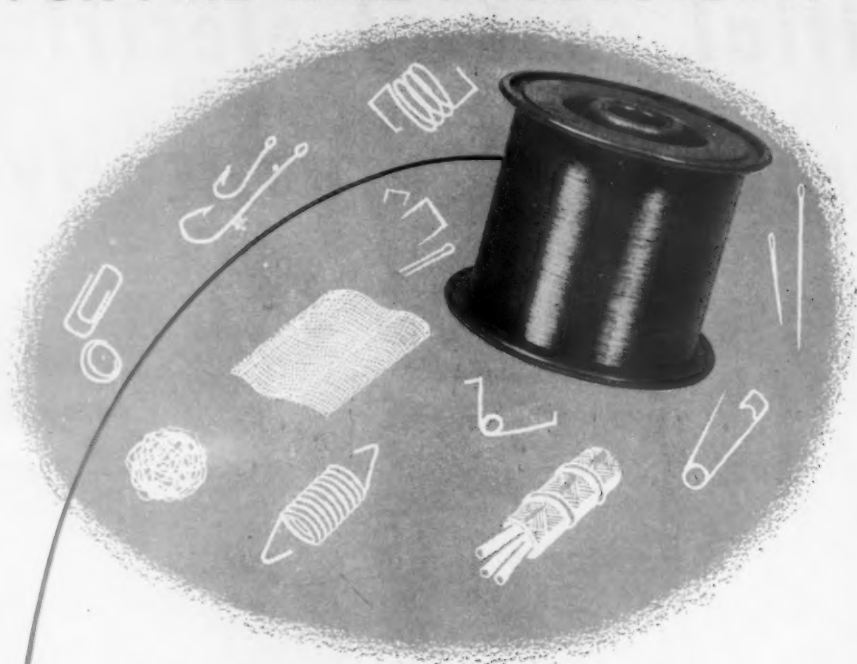
Exide INDUSTRIAL DIVISION, The Electric Storage Battery Company, Philadelphia 2, Pa.

For More Information Circle No. 281 on Inquiry Card—Page 17

JANUARY, 1956

203

FOR FINE WIRE PRODUCTS . . .



Almet Stainless Steels

MEET MORE REQUIREMENTS THAN OTHER ENGINEERING MATERIALS

Does your Fine Wire application call for resistance to heat? . . . to corrosion? Does it require good fatigue properties . . . excellent weaving or other forming characteristics? There's a good chance you will find the material you need among the more than 20 grades of stainless steel we fabricate into high quality Fine Wire. No other family of metals has the combination of properties common to the stainless steels.

Learn more about the interesting properties and applications of our stainless steel Fine Wire, as well as our stainless Rod and Strip . . . send today for a copy of our new 40 page Stainless Steel Design Handbook.



ALLOY METAL WIRE DIVISION



H. K. PORTER COMPANY, INC.
Prospect Park, Pennsylvania

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association news

(Continued from page 196)

led many to pull themselves up by their bootstraps; selfishness once removed, which fostered the idea that anything that helps purchasing men helps me, so it is only enlightened self-interest to participate in it; and pure unselfishness, the genuinely altruistic desire to do something for the profession that has treated me so well.

"There is room for everyone in this program" he declared.

The objectives of the committee he outlined as:

1. To search out the best methods now used in purchasing and make them known to the profession at large.

2. Stimulate better techniques and procedures in purchasing.

3. Stimulate younger men with new ideas to come into the purchasing profession.

"There is no field of purchasing activity that is not of interest to the committee on education, Mr. Clarke said. "We have merely scratched the surface of potential accomplishment. Only with your cooperation and participation will we make further progress."

John L. Gillis, vice president for marketing, Monsanto Chemical Company, spoke on "Faith in New England." Some New Englanders and their critics, said Mr. Gillis, have not understood what's happening in the area. "We are not sick" he declared. "We have been and are in a state of transition."

Some of the economic developments in New England, such as the shoe and textile industries difficulties, have been over-dramatized, he declared.

He said that manpower, initiative, and ingenuity would put New England back in the forefront in the race for business. "This is not just flattery" he pointed out, "my own company has a big stake here and is going to stay here. We have a good

(Please turn to page 208)

These Men at ETNA Make Sure Your SPANG CW Steel Pipe Is TOP-QUALITY

These testing and inspection experts at Etna represent you at the mill to be sure you get *top-quality* pipe every time you order SPANG CW Steel Pipe. Careful control like this is a habit at SPANG, and that's why *quality-controlled* SPANG CW is your best buy for every type of piping installation. See your local SPANG Distributor for your next pipe order!



Meet Al Badack, a member of the day-turn testing team at SPANG's Etna (Pa.) Plant. Al, who has worked at SPANG for nine years, is applying the hydrostatic water test to two lengths of SPANG CW Steel Pipe. Test pressures are applied at readings well above actual *working pressures* for which the pipe is designed. This hydrostatic test assures you that each length of *top-quality* SPANG Pipe you buy has a strong weld and will more than meet your pressure specifications.



SPANG-CHALFANT

DIVISION OF THE NATIONAL SUPPLY COMPANY

General Sales Office: Two Gateway Center, Pittsburgh, Pa. District Sales Offices: Atlanta, Boston, Detroit, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, St. Louis

These men are Chester Galda and Steve Ajjnich, two members of SPANG's inspection team at Etna. Chester, a 22-year man with SPANG, is surface-inspecting coupling fit-up of SPANG CW Steel Pipe. Steve, a veteran of 44 years with SPANG, inspects each length with the aid of a fluorescent light to be sure the threads and the pipe are uniform and free of any defects. Any length that does not meet SPANG's *top-quality* specifications is rejected.

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JANUARY, 1956

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With Dayton P.M.* and New Paper Mill Saves Estimated

Downtime in Hartford City Paper Co.'s pulp beater room was costing approximately \$13,000.00 yearly in maintenance and lost production time due to belt failure.

After studying the problem the local distributor salesman and Dayton field engineer suggested installing eleven Super Thorobred V-Belts on each beater drive. This recommendation was carried out and the installation has been

an outstanding success from every aspect.

In the two years following, with the exception of a yearly Dayton Preventive Maintenance check-up, the beaters *never* lost production time due to V-Belt failure. And the mill operates 24 hours a day, 7 days a week.

Says Chief Engineer Floyd Cline, "Dayton Super Thorobreds have given me everything I wanted in economy,

***Preventive Maintenance**



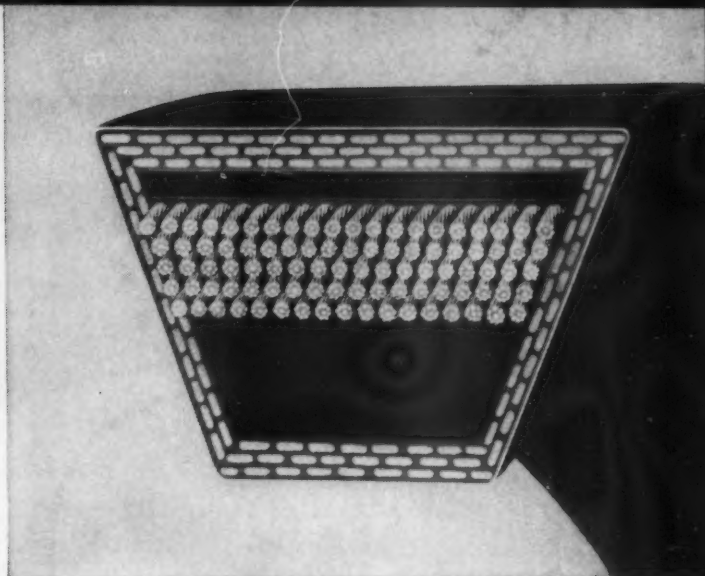
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Super Thorobreds

\$13,000 Yearly

reduced maintenance and increased production. And by following Dayton's P.M. program we have lengthened V-Belt life on drives throughout the mill."

Find out how Dayton P.M. and use of Dayton's complete line of quality V-Belts can reduce V-Belt costs and increase production. See your local Dayton Distributor or write Dayton Rubber Co., Industrial Div., Dayton 1, Ohio.



1. Newer, stronger cover resists cracking and abrasion, gives longer wear.

2. Super-strength cords provide 40% more H.P. than standard V-Belts.



Mr. Floyd Cline, Chief Engineer, Hartford City Paper Co., discusses the benefits his company derives from the Dayton Preventive Maintenance Program with Mr. Leon C. Molton, Dayton Sales Representative. The

Dayton P.M. Program, available to all V-Belt users through local Dayton Distributors, is a method of controlled V-Belt replacement designed to lengthen service life, eliminate downtime.

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See "Belting" in
the yellow pages for
your local distributor

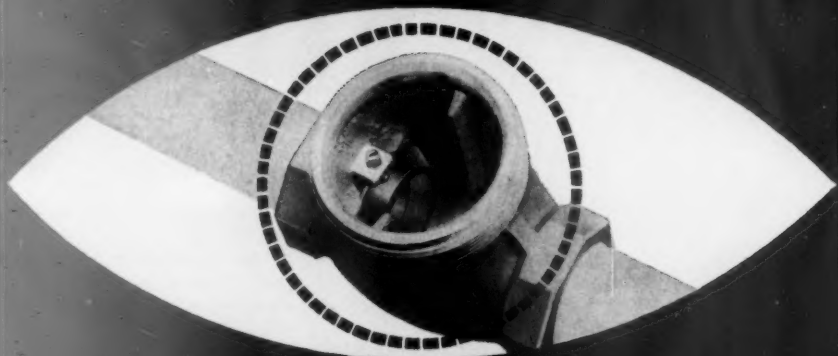
Dayton Rubber

51 YEARS OF PROGRESS

World's Largest Manufacturer of V-Belts



NO OTHER VALVE IN THE WORLD
LOOKS LIKE THIS
 WHEN YOU REMOVE THE BONNET



FAIRBANKS[®] RENEWABLE SEAT RING GATE VALVE

Never has to be removed from the line to replace the seat rings. For the first time in valve history, you can replace the seat rings in a renewable seat ring gate valve, under all normal conditions, in less than 10 minutes, using just a screw-driver, and *with the valve body still installed in the line.* It is simply a matter of removing the bonnet (easily accomplished with the Fairbanks two piece union bonnet construction) loosen the stainless steel retaining screws and lift out the monel seat rings from the body. The new seat rings slip into place and are positively secured again with the retaining screws.

Fairbanks new 200 pound steam working pressure gate valves, available in sizes $\frac{1}{2}$ " through 2" in the rising and non-rising stem construction, have been field tested for over two years under all conditions from steam to corrosive liquids—and have proven completely satisfactory—absolutely dependable. Seat rings have been replaced in from 7 to 10 minutes from the time steam was shut off until it was turned on again. In several instances, it was reported that the replacement was performed in just 4 minutes.

This new patented valve design is typical of the sound engineering and outstanding values found in Fairbanks complete line of Bronze and Iron Body Valves.

YOURS ON REQUEST: Illustrated, descriptive folder gives complete information on Fairbanks Renewable Seat Ring Gate Valve, with details and specifications. Yours without charge. Write today.

THE **Fairbanks** COMPANY

393 Lafayette Street, New York 3, New York
 Branches: New York 3 • Boston 10 • Pittsburgh 22 • Rome, Ga.
 Valves • Trucks • Casters • Wheels • Dart & "PIC" Unions

For More Information Circle No. 285 on Inquiry Card—Page 17

- 
1 Retaining screw loosened with ordinary screwdriver.
- 
2 Finger hooks inside seat ring. Seat ring lifted out of valve body.
- 
3 New seat ring is inserted. Retaining screw tightened.
- 
4 Bonnet replaced on valve body.

association news

(Continued from page 204)

Yankee yesterday to look back on and a great Yankee tomorrow to look forward to, with no visible limitations.

Dr. Joseph Harrington, Jr., Arthur D. Little, Inc., spoke on "The Story of Automation."

He offered a definition of automation which is now being considered for acceptance by a number of technical societies—"the technique of increasing human productivity in the processing of materials, energy and information, through the use of process self-control and product adaptability."

In buying for automation, he advised, the basic steps to be taken have to be understood. These are: decide what the product ought to be; decide what is the best method to get from the raw material to the end product; get the right people and assistance to do the job.

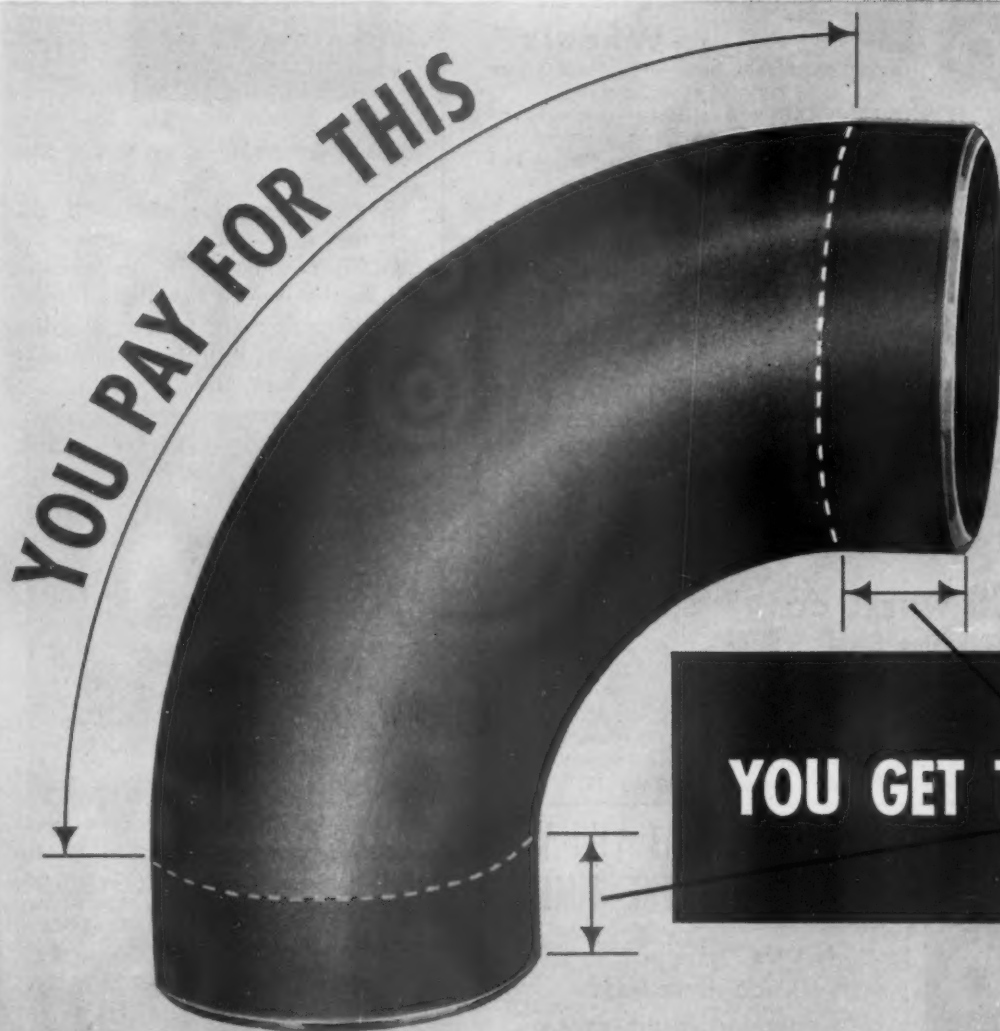
He offered these hints in buying equipment for automation: avoid complex, expensive items whenever possible since they are extremely liable to obsolescence; know what the engineers want; consider leasing as a "hedge"; be ready for quick changes in specifications; look for adaptability in equipment; look for reliability in vendors; don't buy a machine with a lot of tricky gimmicks that add nothing to its value; look for potential and inevitable variations in your product and be sure the machine can take care of them; look for service in its broadest sense.

The session closed with an address by George Seidel, eastern district manager, Extension Division, E. I. duPont de Nemours & Co., on "Research Plans for the Future." A. W. Soell, president of the National Association of Purchasing Agents was guest speaker at the banquet that closed the conference.

For More Information Circle No. 286 on Inquiry Card—Page 17→

PURCHASING

MIDWEST "LONG TANGENT" ELBOWS



YOU GET THESE **FREE**

In no other welding elbow do you get this "bonus" of long tangents. The dotted lines show where standard elbows end. Each shaded straight end equals $\frac{1}{4}$ of the nominal fitting diameter . . . a 12" Midwest "Long Tangent" Elbow has tangents 3" long. As a result of the advantages listed at the right, substantial savings are made on many piping systems by using Midwest "Long Tangent" Elbows . . . which cost no more than other elbows. For further information, write for Catalog 54.

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Plants: St. Louis, Passaic and Los Angeles

Sales Offices:

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Boston 27—426 First St. • Los Angeles 33—520 Anderson St.
Houston 2—1213 Capitol Ave. • Tulsa 3—224 Wright Bldg.
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ADVANTAGES OF MIDWEST "LONG TANGENT" ELBOWS

- ★ They save pipe.
- ★ They often eliminate short nipples and their extra welds.
- ★ They save time and money in lining up and clamping pipe and fitting.
- ★ They make it easier to apply slip-on flanges.
- ★ They remove the circumferential weld from point of maximum stress and can be sleeved.
- ★ THEY COST NO MORE THAN OTHER ELBOWS

MIDWEST HAS THE MOST COMPLETE LINE

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MIDWEST

WELDING FITTINGS IMPROVE PIPING DESIGN AND REDUCE COSTS

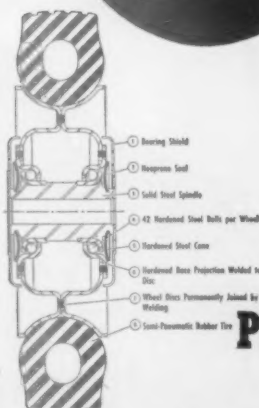


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For More Information Circle No. 287 on Inquiry Card—Page 17

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For More Information Circle No. 278
on Inquiry Card—Page 17

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association news

(Continued from page 194)

actively new Office of Naval Material.

The afternoon sessions of the second day were a series of pertinent roundtable discussions. While they were handled concurrently many of the delegates scheduled their time so as to take in more than one.



Wade H. Hannah and C. E. Beatty headed up a conference panel discussion session. This session was in two parts and served as a sounding board for many public purchasing problems.



Fred A. Mapes, director of purchasing and transportation, United Nations, drives home a point to an attentive audience of C. O. Currier, city purchasing agent, Knoxville, Tenn., left, and A. C. Shepherd, city purchasing agent, Winston-Salem.

These discussion sessions covered many important problems in governmental buying. There was: "The Purchase of Uniforms for Public Employees" under Francis Herold, assistant deputy procure-

(Please turn to page 212)

For More Information Circle No. 288
on Inquiry Card—Page 17→
PURCHASING

RB&W FASTENERS - *Strong Point of any assembly*



Putting the squeeze on wire for a better bolt or nut

HERE'S wire rod squeezing through a succession of drawing dies at RB&W. Why draw wire when it can be purchased in standard dimensions? Because it's a form of quality control that helps make better fasteners.

RB&W has a whole battery of machines to handle round and rectangular stock, even up through 1-inch size. Above you see Dominick DeCarlo keeping a keen eye on rod destined to become cold upset bolts. He's typical of many RB&W people . . . been with the company over 15 years.

He's doing a job that more accurately sizes the material . . . strengthens it . . . assures its uniformity . . . permits control of the coating used and, therefore, of the finish obtained.

It's this combination of facilities, experience and quality control in action in every RB&W plant that assures you more fastener quality for your money . . . a reliable source of supply . . . and strong fasteners that never let you down.

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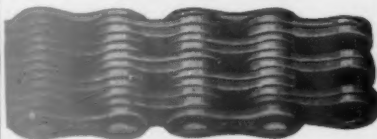
Plants at: Port Chester, N. Y., Coaopolis, Pa.; Rock Falls, Ill.; Los Angeles, Calif. **Additional sales offices at:** Ardmore (Phila.), Pa.; Pittsburgh; Detroit; Chicago; Dallas; San Francisco. **Sales agents at:** Milwaukee; New Orleans; Denver; Seattle. **Distributors** from coast to coast.



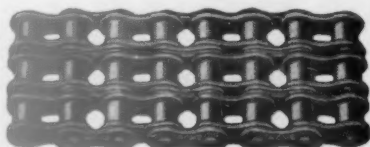
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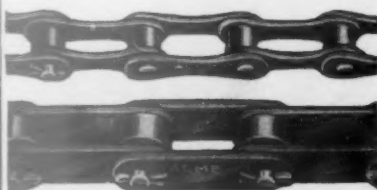
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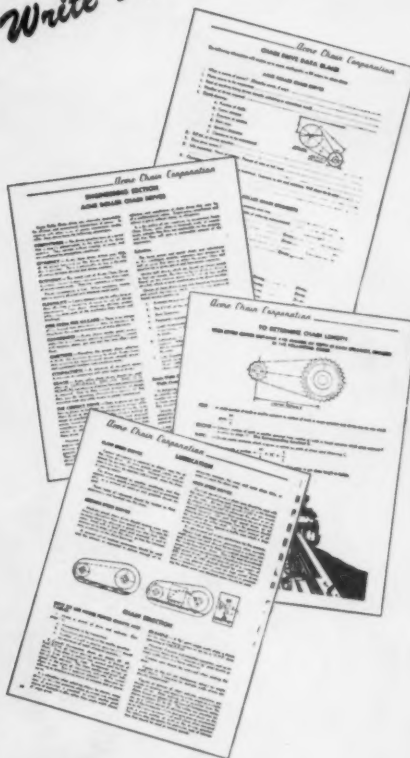
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For use in slower speed power transmission
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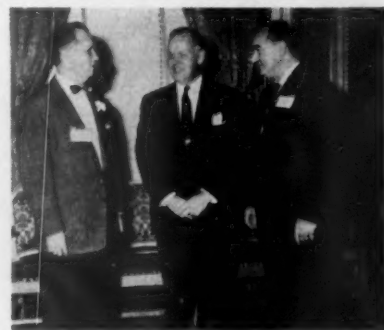
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association news

(Continued from page 210)

ment officer, District of Columbia; "Leasing Vehicles and Equipment for Governmental Use" with John Hanson, director, Motor Equipment Division, GSA; "Operation of Centralized Reproduction or Printing Divisions by Public Purchasing Agencies" lead by Herbert Winston, director of general



Featured speaker at the first luncheon session, Bennet S. Chapple, Jr., assistant executive vice president-commercial, U. S. Steel Corp., is greeted by two NIGP members from Pennsylvania. At left is Michael M. Donohue, county purchasing agent, Allegheny County, and at right is Charles McCarthy, city purchasing agent, Pittsburgh.

services, Greensboro, N.C.; "Purchasing Traffic Paint" under Alvin J. Holm, city purchasing agent, Los Angeles; and "Awarding Concessions in Public Facilities and Structures" with William Hornbuckle, commissioner of purchases and supplies, Kansas City, Mo.

On the final day of the conference, the delegates again held special breakfast sessions to iron out common problems. Then, the conference was closed with various committee reports.

P. A. Panel at Baltimore Advertising Meeting

Four members of the Baltimore Purchasing Agents Association constituted a panel at the November 15th meeting of the Maryland Industrial Marketers, chap-

(Please turn to page 214)

For More Information Circle No. 290 on Inquiry Card—Page 17

SANDVIK SPRING STEEL'S *Double-Accuracy* CUTS COSTS TWO WAYS

Here is how Sandvik's *double accuracy* will cut your costs.

1. It cuts rejects by being consistently within specified gauge.
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What's more, Sandvik steel's uniform physical characteristics from lot to lot means longer tool life plus better performance of the finished part.

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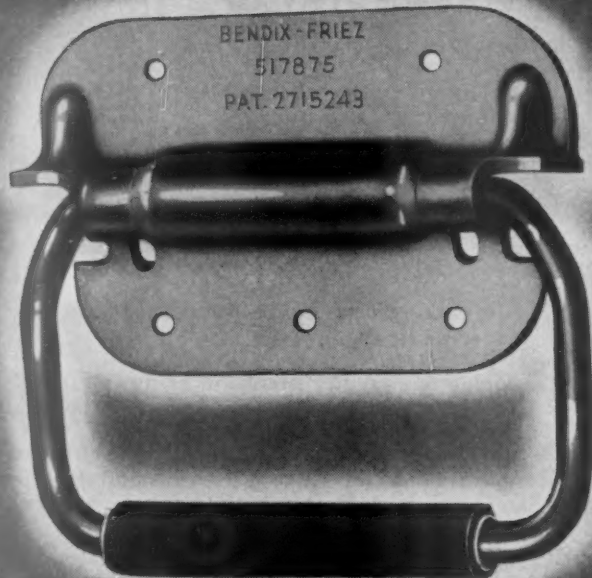
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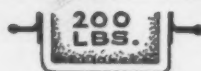
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SNAPS BACK
Reclaiming spring forces grip down. Holds it firmly in place against surface.



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Handle back plate design permits grip to lift to 90° position. Keeps fingers free.



EXTRA STURDY
Easily attached, handle is strong enough to lift 200 lbs. with ample safety factor.

Here's a handle that's "built to take it."

If you manufacture anything that has to be shipped in a carrying-case, and you have been having handle problems, here's your answer.

This patented Bendix-Friez* handle meets MIL-C-4150-A and MIL-T-945A specifications. It is rustproof, rattle-proof, withstands shock and vibration. It is strong enough to lift 200 pounds with an

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Bendix
AVIATION
CORPORATION

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association news

(Continued from page 212)

ter of the National Industrial Advertising Association. The meeting topic was "The Purchasing Agent's Challenge to Advertising". Those taking part were: William N. Francis of Carey Machinery & Supply Co., C. Douglas Francisco of Locke Dept., General Electric Co., D. Herbert Gaston, City of Baltimore, and Frank W. Pettit of Western Maryland Railway. Stuart F. Heinritz, editor of PURCHASING Magazine, New York introduced the subject and served as moderator for the discussion.

Buffalo PAs Told How To Dispose of Scrap

The Wednesday, November 9th meeting of the Purchasing Agents Association of Buffalo, held at the Hotel Sheraton, was a most educational session. A panel of experts had been asked to address the members on the "Disposal of Scrap and Surplus Equipment." They spoke from the scrap dealer's point of view. Leo Chapin of Chapin & Fagin, Inc., discussed "Ferrous Metals and Surplus Equipment;" Leonard Greenfield of Samuel Greenfield Co., Inc., talked on "Non-Ferrous Metal Scrap;" Richard S. Gordon, Buffalo Waste Paper Co. discussed "Waste Corrugated Stock and Waste Paper." After the addresses, a movie entitled "Scrap Reborn" was presented, followed by an open-discussion period. Almost all purchasing agents at one time or another either buy or sell scrap in some form. Therefore, the scrap symposium was most helpful.

Welcome to new members: John T. Schaner of J. H. Williams & Co.; F. W. Martin of Bickford & Francis Belting Co.; Robert A. Steffan of E. F. McCarthy Co., Inc.; and Carl A. Kirsch of ACF Industries Inc.



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For More Information Circle No. 294 on Inquiry Card—Page 17

association news

National Officers Guests at Joint Meeting

A joint meeting of the Baltimore, Washington, and Wilmington chapters of N.A.P.A. was held at the Lord Baltimore Hotel, Baltimore, on November 16th. This was the occasion of the official visit of National President A. W. Soell of St. Louis, and District Vice President W. B. Wight of Rochester. Mr. Soell gave the principal address of the evening.

Erie Association Meeting

The November meeting of the Purchasing Agents Association of Erie was held at the Saga Club on the 16th. A most encouraging report was given by membership chairman Chet Taft, of Erie Strayer Co., and four new members were added to the roster. The speaker was Stuart F. Heinritz, editor of PURCHASING MAGAZINE, who discussed "What's New in Purchasing."

Louisville Ass'n Gets A Chance To Crystal-Gaze

What 1956 has in store for business was the theme of the speeches at the November meeting of the Purchasing Agents Association of Louisville, held on Tuesday, the 13th at the Oak Room of the Seelbach Hotel. Don C. Burdette, district sales manager, Ford Motor Company, gave the outlook on manufacturing; Henry Offutt, president, Kentucky Trust Co., gave the outlook on finance; Martin Wagner, exec. director, Louisville Labor Management Co., on labor; Wilton Terstegge, president, Stratton & Terstegge Co., on distribution. Dr. William C. Huffman, director, Div. Adult Education, Univ. of Louisville and professor of economics gave the outlook for the country's economy as a whole.

For More Information Circle No. 295 on Inquiry Card—Page 17—

PURCHASING



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Keep tools in shape for maximum production with a Black & Decker Bench Grinder. Each grinder is powered by a specially designed, B&D-built, constant-speed motor. Lubricant-sealed ball bearings. Maximum wheel clearance. Switch protected. Adjustable tool rests. 6 to 10 inch wheel sizes. Perfect for the finest tool

dressing, grinding, wire brushing, burnishing, or buffing. Spot B&D Bench Grinders around your plant! We would suggest that you see your nearby Black & Decker distributor today for a free demonstration or write to: THE BLACK & DECKER MANUFACTURING COMPANY, Department 1701, Towson 4, Maryland.

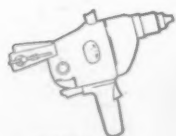
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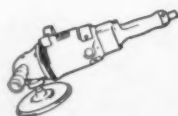
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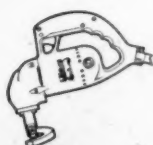
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For More Information Circle No. 296 on Inquiry Card—Page 17

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Labyrinth flow and lateral leakage are stopped by LINEAR'S uniquely designed, revolutionary VEE-DAM RINGS. Installation of these trouble-saving, long-lasting packings is virtually foolproof!

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faced in opposite directions in the grooved hinge area of each ring, hermetically seal off center groove sections when LINEAR VEE-DAM Rings are stacked together . . . eliminating all labyrinth flow.

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LINEAR VEE-DAM Rings save on installation time because they don't require precise fitting. They provide a perfect seal with minimum gland load, giving lower friction against the ram and for longer life than ordinary packing.

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To boost your production—have fewer resharpenings—reduce drill breakage—lower costs—Whitman & Barnes manufactures a complete line of drills for ferrous metals. Each drill type is specifically designed to provide highest efficiency when drilling individual metals.

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For More Information Circle No. 298 on Inquiry Card—Page 17

association news

Georgia PAs Hear National President Soell

November meeting of the Georgia Association of Purchasing Agent was the highpoint of this year's activity. On hand were A. W. Soell, N. A. P. A. national president and Gus Leep, seventh district vice president.

Mr. Soell was featured speaker to the 150 members present. He said that "the driving force behind our economic system is competition." Without competition he said, "There would be no need for more than one brand or make of any product, no need for constantly improving performance or for new and different products."

"All of us," he said, "benefit from the fruits of this competitive system." He continued, "All of the companies we represent are competitors and we, as purchasing agents, are right on the firing line—competing for commodities, for price, for good will, for ideas."

The meeting was one which will long be remembered by the members of the Georgia Association and their guests. It was highly appreciated that both Mr. Soell and Mr. Leep took time out from their busy lives to spend some hours with the group.

Twin City PAs Briefed On Nuclear Energy

A preview of the Nuclear Age was afforded the members of the Twin City Association of Purchasing Agents at their November meeting held at the St. Paul Athletic Club on November 9th. After dinner, Westinghouse Electric Corporation provided a program on Nuclear Energy with a film that lasted 27 minutes. The pre-meeting huddle revolved around a most topical subject for the Christmas season, namely, the "Gift Problem."

✓ **happy balance between**
dependable performance and moderate cost



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Tru-Rol precision, steel-cage, heavy-duty bearing with contoured guide lips assuring true right-line rolling, maintained roller alignment and thin oil film.

● Rollway's **TRU-ROL** Steel-Cage Bearings afford wide latitude in balancing *dependable* performance, *long* life, and *high* load capacity against *moderate* cost. They rate high in any comparison on a cost-performance basis.

A choice of stamped steel retainers with contoured guide lips, or steel segmented retainers assure true rolling and an evenly distributed *thin* oil film—*big* factors in reducing *power losses* and *heating*.

"Crowned" Rollers Relieve End Stress

TRU-ROL offers the extra advantage of a finish-ground "crown" radius on the roller ends. That relieves high end-stress and insures uniform load distribution over the entire length of the roller. The result: **TRU-ROL** Steel Cage Bearings carry heavier loads over longer periods without excessive end-fatigue. They are less affected by slight misalignment or shaft deflection.

Investigate **TRU-ROL** Steel Cage Roller Bearings before selecting any bearing in the medium price range.



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Rollway Metric Series Steel Cage Roller Bearings

● Rollway Metric Series Steel-Cage Bearings offer the greater load capacity of solid cylindrical rollers, plus the true right-line rolling of trunnion rollers turning in a rigid steel cage. There's no roller skew, no pinch out, no cam action. Design permits maximum bearing capacity . . . within small space . . . at moderate cost.



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For More Information Circle No. 299 on Inquiry Card—Page 17

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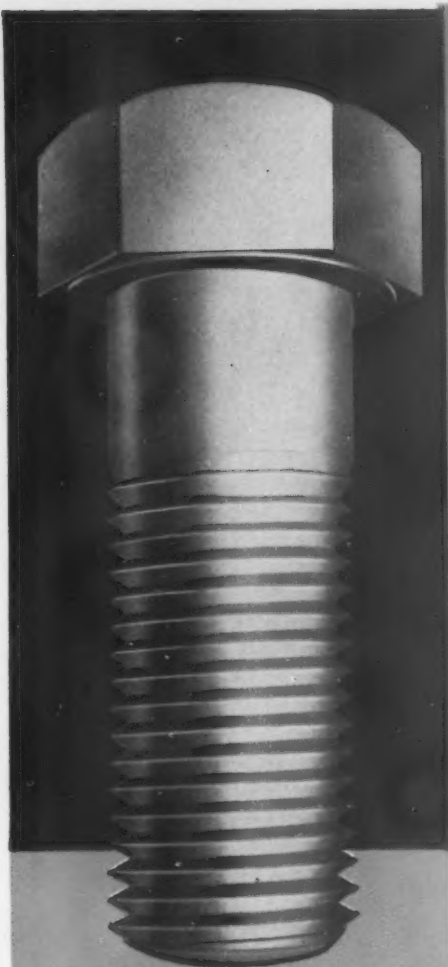
MANUFACTURER OF MICROMETER DIAL GAUGES • MICROMETER DIAL INDICATORS
For More Information Circle No. 300 on Inquiry Card—Page 17

association news

B.C. Association Has a Busy October

Activities of the Purchasing Agents Association of British Columbia for October began with the annual fall golf tournament at Fraser View Golf Course with scores varying from the respectable to the astronomical. The regular monthly meeting was held at the Vancouver Hotel, Vancouver, on the 11th. With president Bill Gourlay in the chair, v-p. Bill Bromley introduced the guest speaker, Lawrence G. Ecroyd, assistant to the president, Mitchell Press Ltd. His subject was "Pioneers of '55." He dwelt on how modern enterprises are developing the vast potentialities of northern British Columbia: Alcoa at Kitimat; the new asbestos operation of Cassiar Asbestos and the large scale copper operation of Grabduc, far up the B.C. coast, etc. Large coal deposits and untold mineral wealth, according to the speaker, only awaited development of transportation, both rail and road for their exploitation.

On October 20th, there was a visitation to the new manufacturing plant of Canadian Western Pipe Mills, Ltd., at Port Moody. The tour began at 7:30 P.M. and all phases of steel pipe manufacturing were inspected. Delicious refreshments, graciously served, concluded a memorable occasion. Thanks are due Bob Nichols, the purchasing agent, for making the arrangements for the tour. The monthly educational meeting of the association was held in the private dining room of the Hotel Grosvenor on October 25th at 6 P.M. Adam Taylor of Dupont Co. of Canada spoke on the "Romance of Chemistry". He traced the evolution of plastics from their infancy to today's countless miraculous formulations.



Lamson 1035 Double Heat Treated High Tensile Cap Screws have long been favorites where extra strength and durability is required.

To attain this extra strength, Lamson Cap Screws are first heat treated at about 1600° F. and then quenched. This imparts "hardness". Then the screws are "drawn", or re-heated, to between 900° F. and 1100° F. and then quenched in a special oil.

This results in a minimum tensile strength of 150,000 pounds per square inch.



Lamson

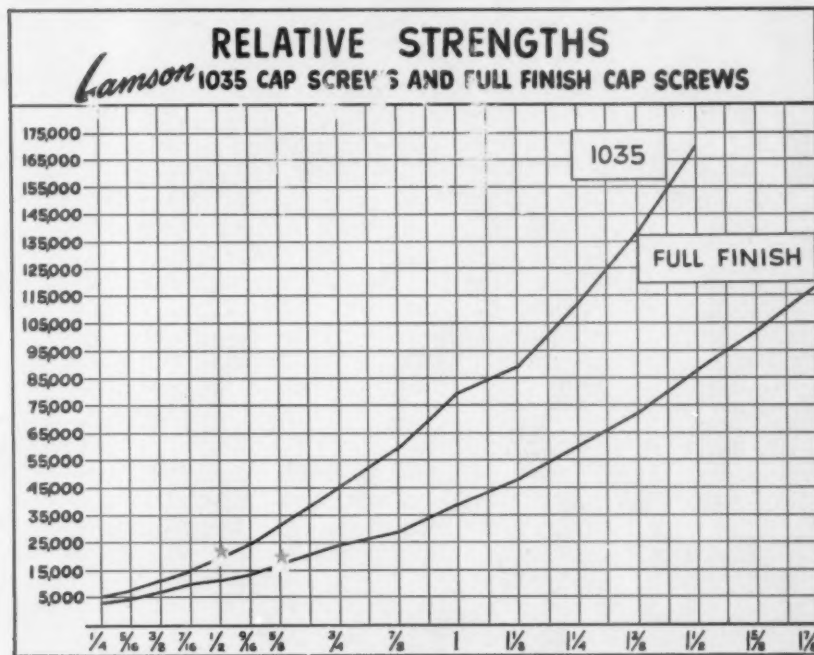
1035 CAP SCREWS OFFER GREATER STRENGTH AT... Less Cost!

If you are now using Full Finished Screws in your assembly operations it will pay you to consider substituting Lamson 1035 Double Heat Treated Cap Screws.

The extra relative toughness of Lamson 1035's enables you to use screws of smaller diameter, yet with equal, or greater, tensile strength.

As an example of increased strength at less cost—on the chart below you will see that a $\frac{1}{2}$ "* diameter Lamson 1035 Cap Screw has greater tensile strength than a $\frac{3}{8}$ "* diameter Full Finished Cap Screw. This means savings in weight and size of assembly.

As for money savings—Lamson $\frac{1}{2}$ " x 2" 1035 Cap Screws are net priced at \$5.36 per hundred as compared to \$7.59 per hundred for the $\frac{3}{8}$ " x 2" Full Finished Screw. Proportionate savings can be made all along the line.



YOU GET MORE WHEN YOU BUY FROM...

The **LAMSON & SESSIONS Co.**

1971 West 85th St. • Cleveland 2, Ohio

CLEVELAND AND KENT, OHIO • BIRMINGHAM • CHICAGO



For More Information Circle No. 301 on Inquiry Card—Page 17

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more than ever ...*

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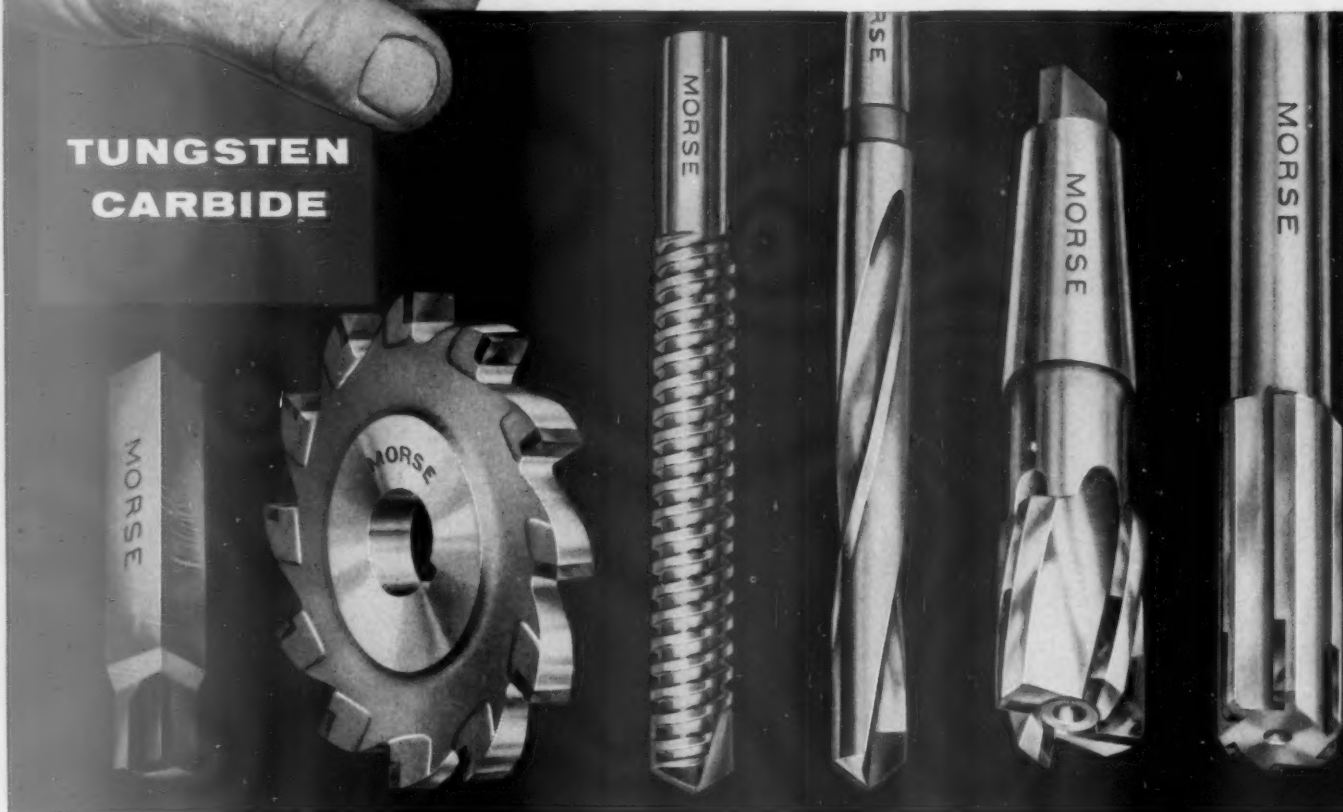
means

"THE MOST"

in Cutting Tools



**TUNGSTEN
CARBIDE**



... plus MORSE Electrofized Tools

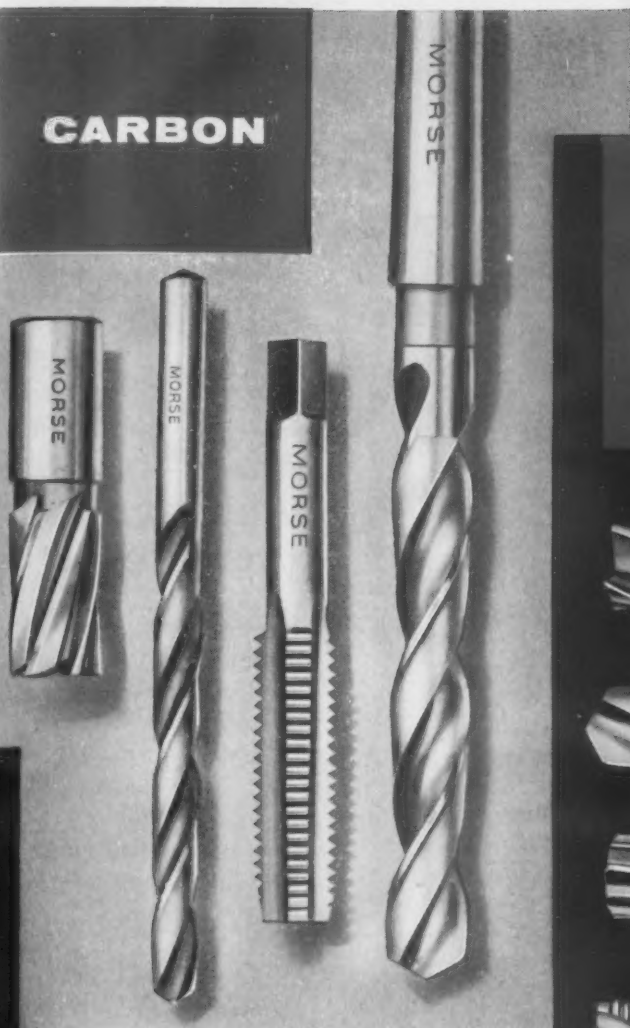
On jobs where there's excessive wear and abrasion, Morse Drills, Taps, Reamers, Cutters and End Mills last 2 to 10 times longer than untreated tools. Available only from your Morse-Franchised Distributor.



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New, exclusive Morse "Vectormatic" process gives you taps with "locked-in precision" ... with tolerances held nearly 300% closer than with old thread-grinding methods. Available only from your Morse-Franchised Distributor.

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Now Morse gives you everything from carbon to carbide . . . the most complete cutting tool line in industry today. *And the one man who has this complete line is your Morse-Franchised Distributor.*

This means that all your needs can be covered by one order . . . one invoice . . . backed up by Morse engineering service. And it also means that your Morse-Franchised Distributor can freely recommend the best cutting tool for every job in your plant . . . *regardless of tool requirement.* So see him *now* for all the cutting tools you need, including the new Morse Tungsten Carbide line, tipped or solid.

MORSE TWIST DRILL & MACHINE COMPANY • NEW BEDFORD, MASSACHUSETTS

(Division of VAN NORMAN CO.) Warehouses in New York, Chicago, Detroit, Dallas, San Francisco

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CUTTING TOOLS

Buy them by phone from your Morse-Franchised Distributor and save ordering time

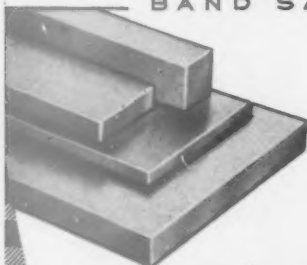
For More Information Circle No. 302 on Inquiry Card—Page 17



HACK SAWS



BAND SAWS



GROUND FLAT STOCK



HOLE SAWS



The Tools in the Plaid Box

**AMERICAN SAW
& MFG. COMPANY**
SPRINGFIELD, MASS.

For More Information Circle No. 303
on Inquiry Card—Page 17

association news

Activities Of New Orleans Ass'n

The regular November monthly meeting of the Purchasing Agents Association of New Orleans was held at the St. Charles Hotel on Monday, November 14th. There was a friendship period from 6 P.M. to 6:30 P.M. followed by dinner. The speaker of the evening was Francis Doyle, v.p., in charge of Trust Dept., National Bank of Commerce, New Orleans. His subject was "Trust Business in Louisiana." On Saturday, November 19th, the fall dinner dance was held at the University Room of Roosevelt Hotel, with "Blue" Prestopnik's orchestra providing divine dance music. The entertainment committee, Ed. Satzer, George Gabler, Jim Fitzgerald, Pat Dillon and Walter Eagan can all take a bow.

The Christmas - Get - Together party was held at the St. Charles Hotel on Monday, December 12th at 6 P.M. and was well attended.

Welcomed as new members were E. O. Jones, buyer, Ethyl Corp., and George A. Sanderson, purchasing agent, Charity Hospital of Louisiana.

Conn. PAs Elect Officers

D. Norton Williams, purchasing agent at Wallingford Steel Co., Wallingford, was unanimously elected president of the Purchasing Agents' Association of Connecticut, Inc. at the annual meeting on November 22 at Restland Farms in Northford. Charles T. Haffey, plant purchasing agent at Chas. Pfizer & Co., Groton, was elected first vice-president. George J. Raiselis, purchasing agent at The Bassick Co., Bridgeport, was made second vice-president. Almost 300 members and

(Please turn to page 228)

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How can you go wrong by following the leading manufacturers of widely-diversified products?

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For More Information Circle No. 304
on Inquiry Card—Page 17

PURCHASING



On your purchase orders...

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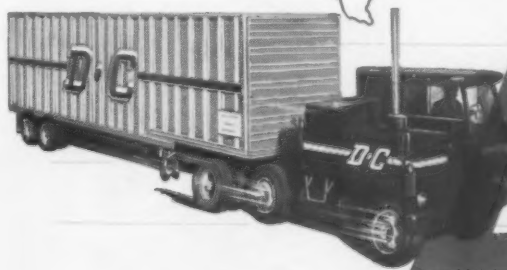
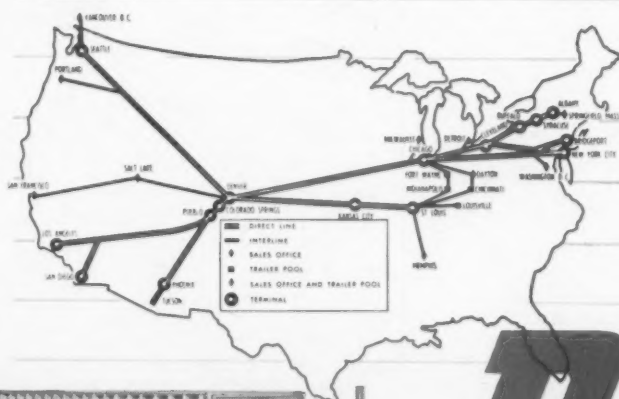
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TRUCKING CO., INC.

association news

(Continued from page 226)

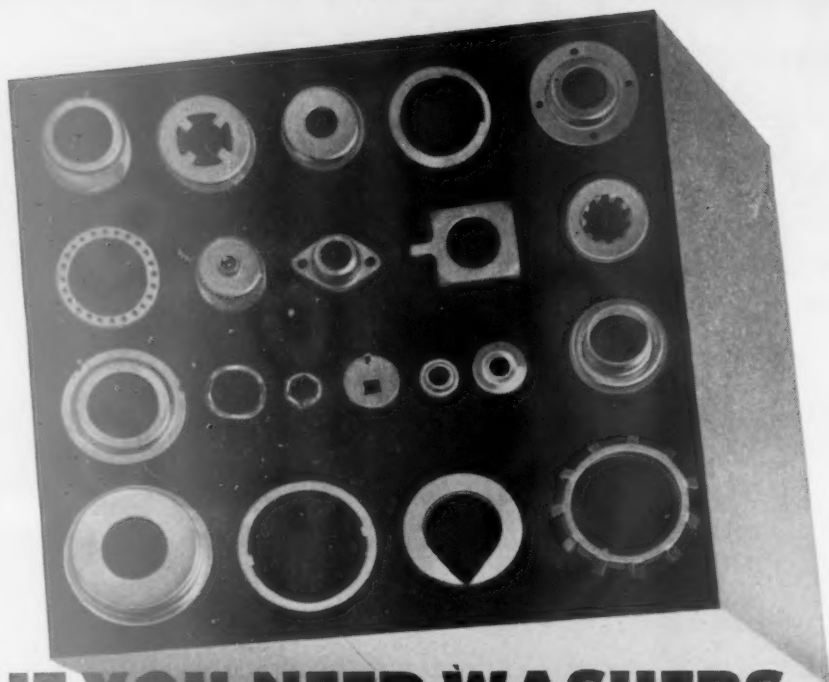
guests were in attendance to hear George A. Renard, executive secretary of the National Association of Purchasing Agents. New directors also elected were: Charles A. Berlepsch, Rockbestos Prods. Corp.; Clifton W. Boyland, Sorensen & Co., Inc.; Maxwell D. Coe, Stanley Works; Allan Frew, Waterbury Buckle Co.; James J. Kelly, Sheffield Tube Co.; Ezra J. Kihlgren, Hartford Empire Co.; John H. Mills, Bridgeport Brass Co.; and Wesley B. Scott, Clark Bros. Bolt Co.

Pittsburgh Ass'n Hear Talk On Management

The November meeting of the Purchasing Agents Association of Pittsburgh was held at the University Club on Tuesday, November 15th. Dr. Forrest H. Kirkpatrick, assistant to the president, Wheeling Steel Corp., was guest speaker. His subject was: *Five Major Management Tasks*. He gave a most illuminating address. At the forum held prior to the dinner the subject under discussion was *Trade Relations*. A. B. Wadsworth, Allegheny-Ludlum Steel and W. L. Thomson, Westinghouse Electric Corp., acted as moderators. It was announced that for the association's highlight of the year, the Executive Night held in March, Fulton Lewis, Jr., has accepted the invitation to be guest speaker.

Welcomed as new full members are James W. McNeil, Pittsburgh Coal & Chemical Co., Fred A. Catalino, Mt. Vernon Bridge Co., to succeed A. W. Brubach, Kenneth E. Haase, Peoples Natural Gas Co., to succeed L. B. Hartman, Robert J. McCombs, Russell, Burdsall & Ward Bolt & Nut Co., to succeed L. M. Kaspers, Joseph J. Detig, Keystone Lumber Co., to succeed W. P.

(Please turn to page 230)



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Any Kind ... Any Shape ... Any Size
Here's Your No. 1 SOURCE

It can be important to you, in a number of ways, to deal with the world's largest producer of washers ... and to maintain such a contact as standard purchasing policy.

You have assurance, first of all, of uniform high quality ... a point too frequently overlooked in the purchase of washers. Large volume production permits a stable, competitive cost factor and quick availability of all classifications of standard and special washers ... any kind, any shape, any size or materials. Our complete inventory of more than 100,000 sets of Washer Dies is at your disposal without extra cost ... offering the broadest possible base for the selection and production of washers to meet your specifications.

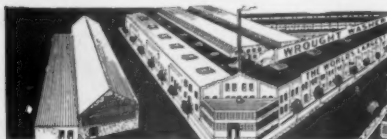
Count Wrought Washer Mfg. Co. as your No. 1 Source for Washers and Stampings and enjoy the benefits that this represents.



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The World's Largest Producer of Washers

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For More Information Circle No. 306 on Inquiry Card—Page 17

"No breakdown in 14 years with Morse Roller Chain"

—says Ajax Electric Company engineer



Ajax Electric Salt Bath Furnaces point up how roller chain can save operating costs, cut your downtime, give you flexible, dependable power.

Ajax Electric Co., Philadelphia, makes electric salt bath furnaces, used to temper metals. These furnaces use roller chain throughout for conveying and power transmission.

Alkali cleaner, molten salt, steam—each is a potential threat to the more than 2000 feet of chain used. Yet, for 14 years, drives like these have performed efficiently, *without a single breakdown.* (Read statement below.)



Furnace interior, from end. Main drives lie parallel along bed. Transfer chain drives convey fixture carriers.

←Operator hangs parts on fixture holder. By changing sprocket or adding or removing links, timing of drives can be altered.

"We've worked with Morse Chains for 14 years, and have never experienced a breakdown of this product during that period. And, in our complex installations of electric salt bath furnaces, Morse is giving us excellent results."

Philip N. Atwood
Field Engineer
Ajax Electric Co.

Morse Roller Chain instantly adaptable

The metal parts hardened in these Ajax Furnaces often require "dip" periods that vary in length. By changing the number of links in a drive, or sprocket diameter, each step can be speeded up or slowed.

You, too, can get superior power transmission with Morse Roller Chain. Precision-made in all standard sizes and pitches. A wide variety of standard and special-purpose attachments are available.

Check these advantages of Morse equipment:

- ✓ Long service life
- ✓ Low operating cost
- ✓ Requires minimum maintenance
- ✓ Wide range of types and sizes
- ✓ Precision construction

Literature, engineering help FREE

Write today for Catalog C 51-50, or free consultation. Morse has skilled engineers available to help you solve practically any problem involving transmission equipment: Roller Chain, Hy-Vo Chain, Silent Chain, Sprockets, Clutches, and Couplings.

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**CHAINS, CLUTCHES,
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PACING INDUSTRY WITH RESEARCH



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**NON-FERROUS
FERROUS AND
CENTRIFUGALLY
CAST SLEEVES,
ROLLS, LINERS,
TUBES, RETORTS,
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BEARINGS, ETC.**

Our continuing development program is a major factor in meeting your ever increasing demands for ferrous and non-ferrous centrifugal castings. And research is a vital phase in keeping ahead of your requirements.

Precise metallurgical control is maintained throughout the entire manufacturing process to produce strong, uniform, close-grained castings which are extremely resistant to heat, corrosion, and abrasion. Excellent machining facilities for turning, boring, and drilling are also available.

You can rely on Chief Sandusky as a versatile integrated centrifugal specialist where castings are produced to your specific requirements with modern, up-to-date equipment.

C. M. Lovsted & Co., Seattle, Wash. • Tynes Bros., Birmingham Ala. • Cordes Bros., San Francisco and Wilmington, Calif.



Chief SANDUSKY CENTRIFUGAL CASTINGS

FERROUS AND NON-FERROUS

SANDUSKY FOUNDRY AND MACHINE CO., Sandusky, Ohio

For More Information Circle No. 308 on Inquiry Card—Page 17

association news

(Continued from page 228)

Winkler, E. J. Eberts, Wyckoff Drawn Steel to succeed H. Hughes Baltz and Dale C. Weisenstein, Westinghouse Electric Corp. to succeed V. A. Lindeman.

Lancaster And York Club Do Some Fraternization

One of the bitterest wars in history was that between the Yorks and the Lancs, the Wars of the Roses in the 15th century. Falsifying history the Purchasing Agents Club of York foregathered amicably with the Purchasing Agents Club of the Manufacturers Association of Lancaster to hold a joint meeting on November 15th at the Overlook Golf Course, Lititz Pike, Lancaster, Pa. After a bang-up dinner they heard an inspiring address by William J. McKee, manager of sales, National Tube Div., U.S. Steel Corp.

Past President, N.A.P.A. Addresses Dallas Ass'n

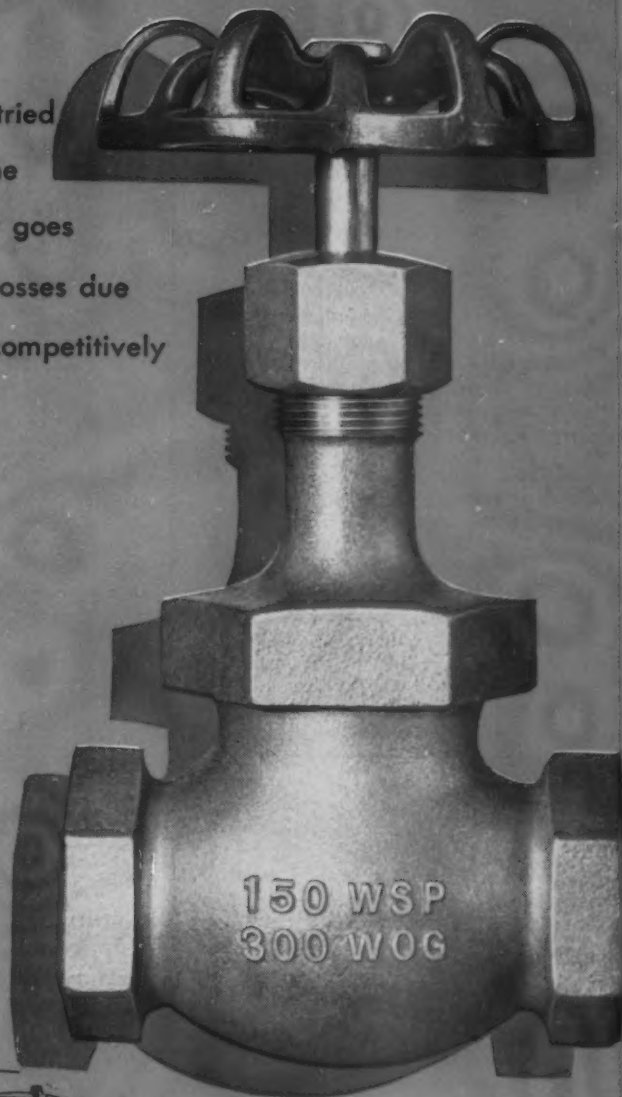
Ben R. Newberry, director, Purchases and Stores, Lone Star Gas Co., and president of N.A.P.A. in 1943, was the guest speaker at the regular meeting of the Purchasing Agents Association of Dallas at the Melrose Hotel on Thursday, November 10th. His subject was "Purchasing, A Field Of Opportunity."

This year, the Ladies Night Party was held at the Lakewood Country Club on December 14th and a most agreeable time was had by all. New members added since the last meeting were James L. Nave, Lone Star Boat Mfg. Co., Inc.; Whittier B. Brown, Jr., Oil Well Supply Div., U.S. Steel Corp.; Cecil C. Adams, Stewart Office Supply Co.; and James R. Bruno, Chance Vought Aircraft, Inc.

END THOSE VALVE TROUBLES...NOW!

Are bronze valves a source of trouble in your maintenance program? Then you haven't tried O-B valves. Put them in your plant. Watch the maintenance job get easier as O-B quality goes to work. Notice the drop in production time losses due to valve troubles. O-B bronze valves are competitively priced. Ask your distributor about them.

Ohio Brass
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O-B VALVES

YOU GET WHAT YOU PAY FOR



Paul W. Christman Jr.

VICE-PRESIDENT, THE CINCINNATI GEAR CO.

John Ruskin knew what he was talking about when he wrote: "There is hardly anything in the world that some man cannot make a little worse and sell a little cheaper, and the people who consider price only are his prey." Just as this applies to ice cream or magnetos or wool socks, so does it apply to gears.

This "cheap price" paid for a necessarily cheap product may not prove to be such a bargain if the ultimate cost of using such a product can be determined. In the case of gears, each of the following points directly affects final cost: 1. The "price tag" on the gear itself. 2. Extra assembly time wasted in fitting and salvaging "off color" gears. 3. Lack of reasonable service life. 4. Excessive noise. The first point is obvious, and the second becomes so upon observation: for not until the gears have been assembled, "run off," and passed by inspection can the direct cost of the gears be determined. Often part or all of the potential savings on "price" are lost (often without even being recognized) on the assembly floor. Points three and four represent more insidious and hard-to-measure costs—but costs that can be even more damaging, for they will be measured by your customer, and can easily spell the difference between repeat orders or a customer lost for good.

Thus the ultimate cost of a gear that appears to be a bargain may, in the final analysis, actually be exorbitant. That's why it can pay you to buy good gears, custom made for your specific application—gears made by The Cincinnati Gear Company.

THE CINCINNATI GEAR CO.

CINCINNATI 27, OHIO

"Gears—Good Gears Only"



For More Information Circle No. 310
on Inquiry Card—Page 17

association news

Central Iowa Ass'n Entertains Product Show

The Purchasing Agents Association of Central Iowa held a regular meeting in the Terrace Room of the Hotel Savery, Des Moines on November 17th, in conjunction with the 1955 Products Show. An invitation had been extended to all Products Show exhibitors to attend the dinner. A social hour beginning at 5:30 P.M. before the roast chicken dinner scheduled for 6:30 P.M. afforded an opportunity for the PAs and the exhibitors to get together. As an added attraction, the talents of Don Reid had been engaged for the evening to give the guest speech.

Crowded Program for PAANJ

All activities of the Purchasing Agents Association of North Jersey are hitting on all four.

The November meeting was held on the 9th with one of PAANJ's own members as guest speaker, Charles F. Sullivan. As director of Division of Purchase & Property, State of New Jersey, his address was most illuminating and authoritative on his chosen subject which was "The Scope and Function of the State Division of Purchase & Property." At the monthly forum held before the dinner, Frank Curran and his committee had selected "Handling of Physical Inventory" as the subject for discussion. The high level of these Forum discussions is attested by the fact that two of the papers have made the pages of Purchasing, one by Frank Curran in the October issue and one by Brenton Riha of Igoe Brothers in December. On December 14th, the association's first annual Xmas party was held at the Robert Treat Hotel and acclaimed a big success.

Protective Coating...



another
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CLARK

Superiority

When the disastrous flood hit the Northeast last Fall, several Clark customers in that area learned first-hand the value of this exclusive Clark process. Writing about a company-customer's experience, one distributor reported:

"C. A. Lindell Co. had four feet of water in their bolt department and found that after the water had receded they could pick out the Clark Bros. bolts by the minimum amount of rust . . . while competitors were more heavily rusted. We think this is a justification to your rust proofing."

Very truly yours,
THE PAGE, STEELE & FLAGG CO.
F. H. Page, Jr.

Rust resistance . . . another example of the "extras" which are standard with Clark.

Write for full information on the extensive Clark line of nuts, bolts, screws, rivets, and other industrial fasteners.

Since 1854



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For More Information Circle No. 311
on Inquiry Card—Page 17

DRIVER-HARRIS

salutes a great engineering achievement

CUTLER-HAMMER

Eutectic Overload Protection

Cutler-Hammer engineers made history with their eutectic alloy type overload relay for electric motor protection. Virtually all leading manufacturers of motor control today offer this type of overload protection. And more than 25 million electric motors in daily use bear witness to the acceptability and dependability of this proven protection.

Driver-Harris salutes this Cutler-Hammer achievement. The Cutler-Hammer Eutectic Overload Relay shows the dependability of certain alloys in practical use. In the Cutler-Hammer Relay, both the eutectic element which must function so precisely and the heater element which causes it to function are alloys. We are proud that Driver-Harris Nichrome is the resistance alloy used in the heater element of millions and millions of these successful overload relays.

It is not surprising that Driver-Harris alloys are selected by so many leaders of American industry. Driver-Harris alloys are the product of manufacturing methods employing the most precise metallurgical checks and quality controls. Nichrome*V and Nichrome* have long been accepted as the standard by which all electrical resistance alloys are measured. And these are only two of the 112 special purpose alloys developed by Driver-Harris since 1899 for electrical heating, resistance, and electronic applications. Do you need a special alloy? Send us your specifications.

*T.M. Reg. U. S. Pat. Off.



Why Eutectic Alloy Overload Relays Stay Accurate

Basic in any overload relay is the need of having a disconnect mechanism respond to dangerous heating of the motor windings. All such relays use heater coils in series with the windings to provide the danger signal within the control unit. In the millions of overload relays using eutectic alloy elements to respond to the increased heating, disconnect occurs when the alloy melts. As this alloy has one definite melting point, the overload relay must always be accurate, regardless of how often or how infrequently it operates.

Sole producers
of Nichrome V and
Nichrome



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BRANCHES: Chicago, Detroit, Cleveland, Louisville, Los Angeles, San Francisco • In Canada: The B. GREENING WIRE COMPANY, Ltd., Hamilton, Ontario

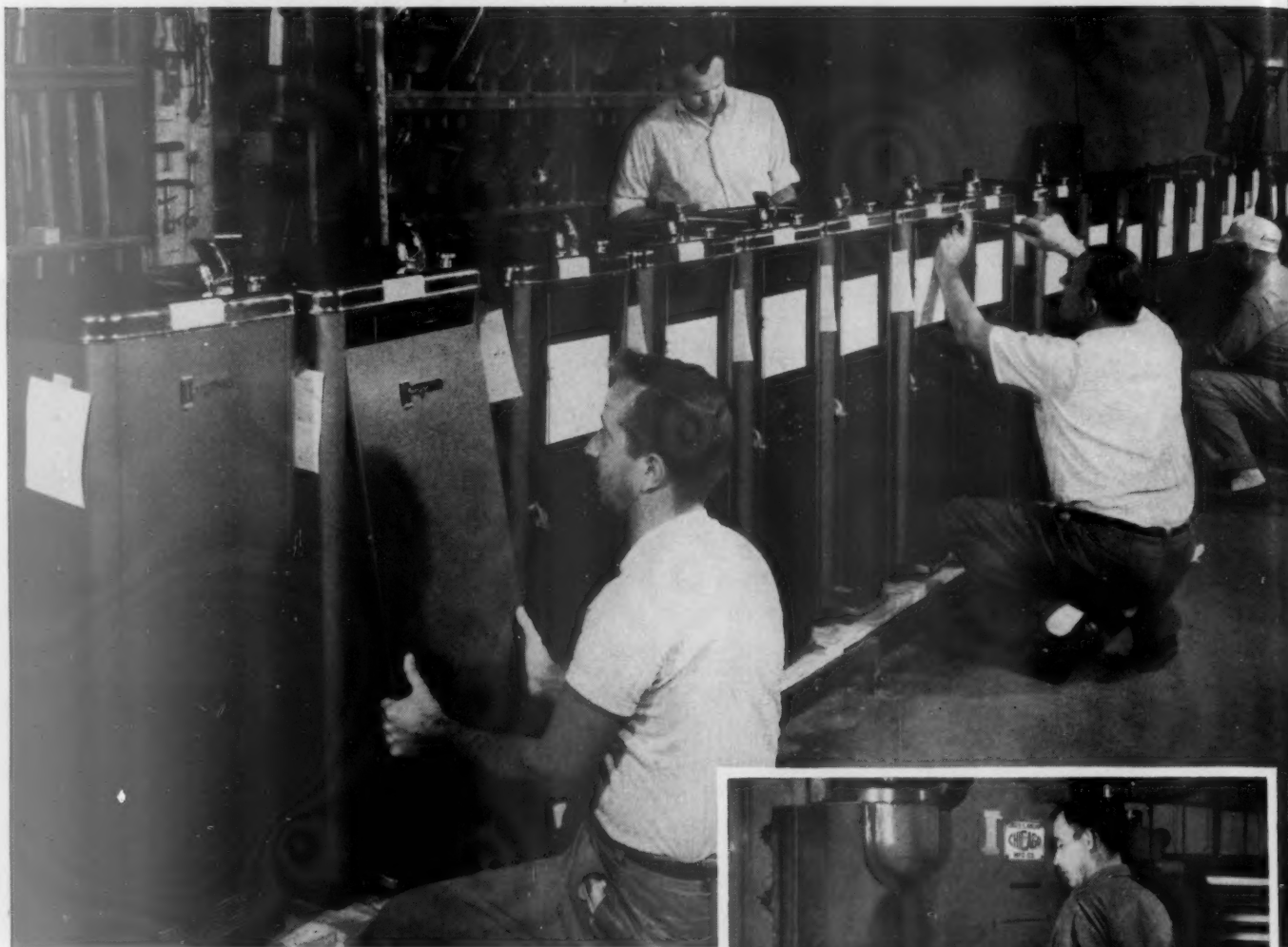
MAKERS OF THE MOST COMPLETE LINE OF ELECTRIC HEATING, RESISTANCE, AND ELECTRONIC ALLOYS IN THE WORLD

For More Information Circle No. 312 on Inquiry Card—Page 17

JANUARY, 1956

233

Republic Electro Paintlok® doubles p



ONLY ONE COAT OF PAINT on Republic Electro Paintlok, results in a handsome, durable finish for these Temprite water coolers. In addition, Republic ENDURO® Stainless Steel is used for fountain tops to provide life-time beauty and sanitation.

SEVERE FORMING AND BENDING are shrugged off by chemically treated, electro plated zinc surface of Electro Paintlok. In fact, the phosphate coating itself acts as a lubricant for certain forming operations. Send coupon for full details.



REPUBLIC



World's Widest Range of Standard Steels

es production of existing facilities

By using Republic Electro Paintlok instead of cold rolled sheet steel for their water cooler housings, Temprite Products Corporation of Birmingham, Michigan, actually double the output of their painting and drying facilities. How? Because only one coat of paint is used on these parts when fabricated from Electro Paintlok, and one pass through the drying oven is sufficient to produce a high-quality, long-lasting finish.

In contrast with this, uncoated sheets for this application required a prime coat before final painting. Temprite found, through experience, that the labor and material cost of the primer coat exceeded the extra cost of Electro Paintlok. Even more important, at today's level of demand they could not maintain required volume of produc-

tion when both a primer and final coat of paint had to be applied and dried.

As a result, Temprite has standardized on Republic Electro Paintlok. And in addition to cost and time savings, they secure a higher quality finish as well. Even when scratched through, Electro Paintlok's chemically treated zinc surface continues to retard corrosion and effectively limits it to the point of original damage.

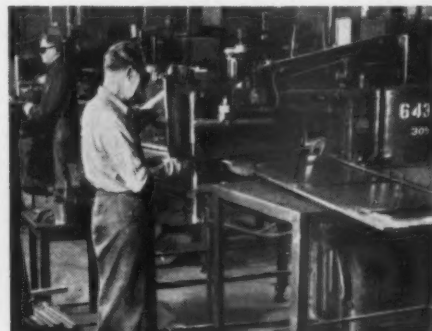
Add all of these advantages to the fact that Electro Paintlok is delivered from the mill in prime condition for painting and will not rust under approved warehousing conditions . . . and you can see why it will pay you to investigate its use wherever you have a paint adherence problem. Simply contact your Republic representative or mail the coupon for full information.



BUILT-IN SALES APPEAL for the Temprite Club Bar, four-beverage dispenser, is secured through the use of ENDURO Stainless Steel for all housing components. The lustrous beauty of ENDURO harmonizes with any surroundings . . . stays bright and sanitary indefinitely without laborious polishing. Republic makes all analyses of stainless to meet every application. Coupon will bring full information by return mail.



PRODUCTION PROBLEMS VANISH when you specify Republic Steel Sheets. Whatever your requirements, your Republic representative or steel distributor can help you select the ideal type of sheet. He is backed by a broad selection including hot rolled, cold rolled, galvanized, Galvannealed, Electro Paintlok, Electro Zincbond®, Electro Flashcote and other types in a wide variety of analyses.



END PRODUCTION BOTTLENECKS by sending your sheet steel fabricating problems to Republic's Berger Division. You get the benefit of complete contract fabricating facilities, plus a wealth of experience, designed to form high-quality sheet steel into products or components of your own design, economically. Investigate this means of cutting tooling costs and plant additions. Mail the coupon for further data, today.

STEEL

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For More Information Circle No. 313 on Inquiry Card—Page 17

JANUARY, 1956

235

be Hard-Headed

about "Soft"
hammers



Consider this fact: You get more years of solid, proved-in-use performance with C/R Jawheads than with any other soft hammer on the market. Tested and proved to deliver greater striking power, C/R Jawheads do more work with fewer blows . . . give greater output, reduce worker fatigue, improve safety. Also—they last longer and cost considerably less than most comparable "soft" striking tools. Replaceable faces of C/R rawhide won't spark, crack, fly out, or injure delicate parts and finishes. They don't get brittle when cold, won't soften up when it's hot. C/R Jawheads are the best "soft" hammers you can buy! Try 'em.

See these features—
proved in use!

- Tough water buffalo rawhide faces—won't spark, crack, mar
- Threaded collar locks faces tight so can't fly out
- Extra-long handles give greater striking power
- Oversize handle flare gives safe, comfortable grip



Buy C/R Jawhead hammers, mallets, mauls from your local industrial supplier, or write for illustrated folder.



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In Canada: Distributed by Super Oil Seal Mfg. Co., Ltd.,
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For More Information Circle No. 314 on Inquiry Card—Page 17

association news

"Al" Soell Visits Kalamazoo Purchasing Agents

To fit his crowded schedule, the Kalamazoo Valley Purchasing Agents Association switched its November 8th night dinner date to a noon luncheon so as to hear and honor the N.A.P.A. national president, A. W. Soell. The luncheon was held at the Harris Hotel. After greeting the members, "Al" directed most of his remarks to his own personal views of "Automation." He upheld it as "a many splended thing," and predicted that the present high level of U. S. economy would be even higher under full automation. Better products and bigger markets will follow in its wake. Best of all, automation will mean greater competition, which is the driving force behind this country's economic structure. At the conclusion of his speech, President Soell urged purchasing men to professionalize their service, to better sell themselves to management but to be modest even when credit was due.

Toledo Ass'n Holds 7th Annual "Serv-A-Show"

To open their seventh annual "Serv-A-Show," where industry meets the people it serves and supplies, the Toledo Purchasing Agents' Association held a preview in the Civic Auditorium on Wednesday, November 9th, from 5:45 to 8:30 P.M. It was restricted to members of the Association, their guests and exhibitors. An appreciation cocktail party in honor of the exhibitors opened the show. The private preview took place later from 7:30 to 8:30 P. M. The show was open to the public through November 10th and 11th, from 6:30 to 11:30 P.M.

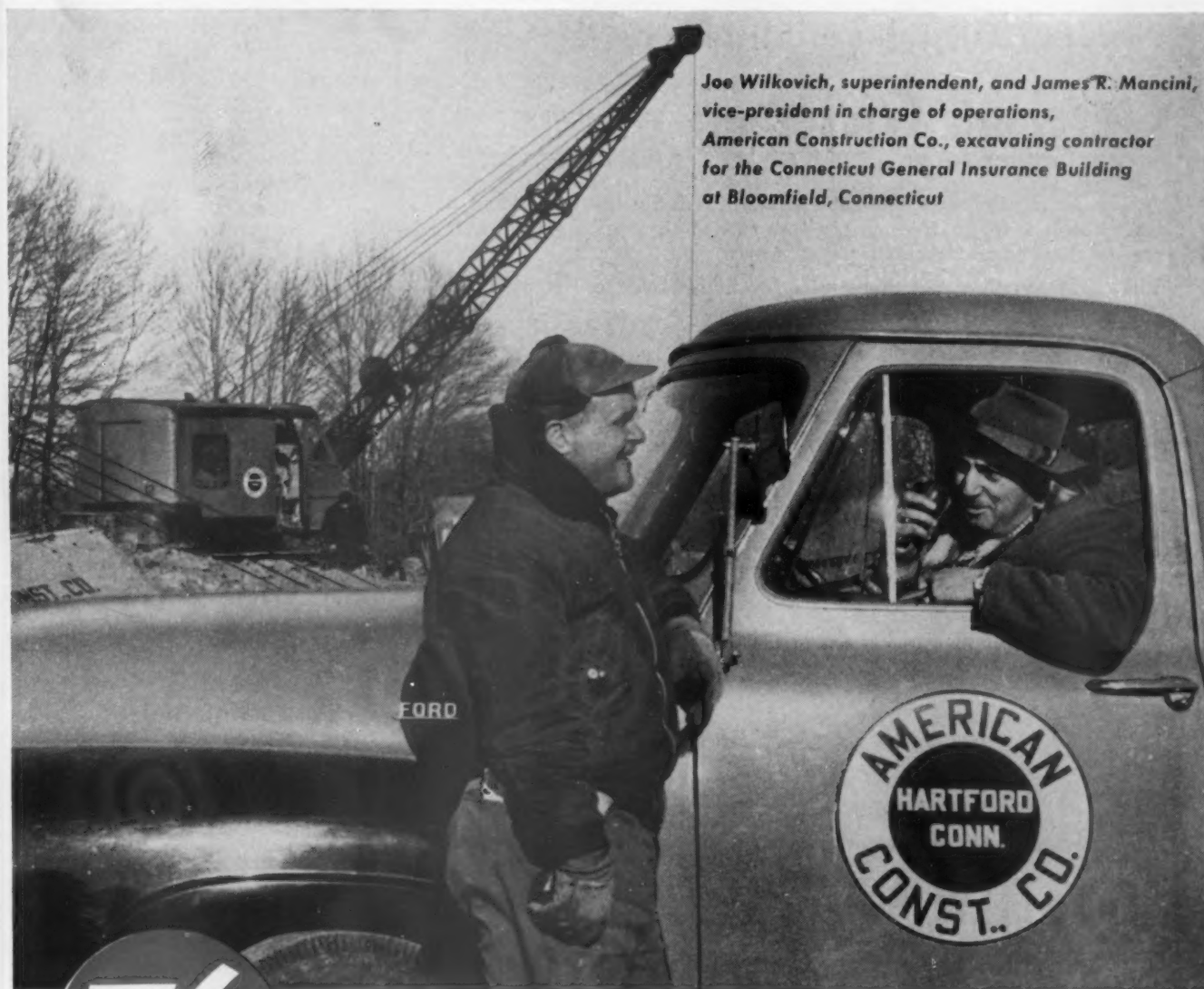
"...it pays to buy the finest"

"About five years ago a Union Oil Company representative recommended T5X motor oil and UNOBA *multi-purpose* grease for our equipment, and we agreed to try them on certain of our machines.

"After thorough testing of these products in a few pieces of our equipment we were more than gratified with the results. Engine performance improved and oil drain intervals were extended by using T5X. Costly lubrication errors became a thing of the past with *multi-purpose* UNOBA. In fact we've never had a part failure where this lubricant was used.

"We've standardized on Union lubricants for our more than 50 pieces of equipment. We endorse them without reservation to operators of gasoline or diesel-powered heavy-duty equipment that is subject to hard usage. We've found it pays to buy *the finest*."

From everywhere come reports like this one of the American Construction Co., Inc., of Hartford, Conn. There's a Union Oil representative near you. Call him and have him show you how Union Oil Company products can save you time and money...no matter what lubricants you're using now.



Joe Wilkovich, superintendent, and James R. Mancini, vice-president in charge of operations, American Construction Co., excavating contractor for the Connecticut General Insurance Building at Bloomfield, Connecticut



UNION OIL COMPANY OF CALIFORNIA

Los Angeles: Union Oil Bldg. • New York: 45 Rockefeller Plaza • Chicago: 1612 Bankers Bldg. • New Orleans: 644 National Bank of Commerce Bldg. • Atlanta: 401 Atlanta National Bldg. • Kansas City, Mo.: 612 W. 47th St.

For More Information Circle No. 315 on Inquiry Card—Page 17



PROTECTION for an intricate part!

Cleveland Containers save you money
in packaging large parts as well as smaller items.

Above is a metal end telescope container designed to package a rotary group for a hydraulic oil pump. Both ends of the shaft are further protected with paper tubes.

This style container has many uses for both heavy and light parts.

SHOULDERS to lean on!



Illustrated is an all-paper container with a die cut disc fitted into each of the paper cap ends. This is to accommodate a quantity of thin gaskets assembled over a paper tube for convenience in merchandising and protection in shipping.

Suitable for such items as rubber gaskets, washers, shims, rubber or wire coils.

**WRITE for our complete
Packaging Folder.**

Why pay more? For good quality . . . call CLEVELAND!

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CLEVELAND CONTAINER
COMPANY •**

6201 BARBERTON AVE., CLEVELAND 2, OHIO

• ALL-FIBRE CANS • COMBINATION METAL
AND PAPER CANS • SPIRALLY WOUND
TUBES AND CORES FOR ALL PURPOSES

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**ABRASIVE
DIVISION
CLEVELAND**

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Metropolitan Purchasers Visit Plant

On Wednesday, November 16th, members of Metropolitan Purchasers' Club of New York were guests of Dun and Bradstreet at their New York plant at 99 Church Street. After being entertained to lunch, there was a short talk on "How Dun & Bradstreet Can Serve The Purchasing Agent." A short film presentation followed, after which a tour of the plant took place. The November dinner and meeting were held at the Midston House on Wednesday, November 9th. Jack Wolff, business counselor and management consultant, was the guest speaker. He gave an address on "Communications In Purchasing." He emphasized that, though communications are taken for granted, they are a most important facet of business life as any breakdown in them will promptly prove. This year's Xmas party was held on December 13th. Members and their girl friends (in almost all cases already their life's companion) had a thoroughly good time.

Annual Meeting Of Connecticut Ass'n

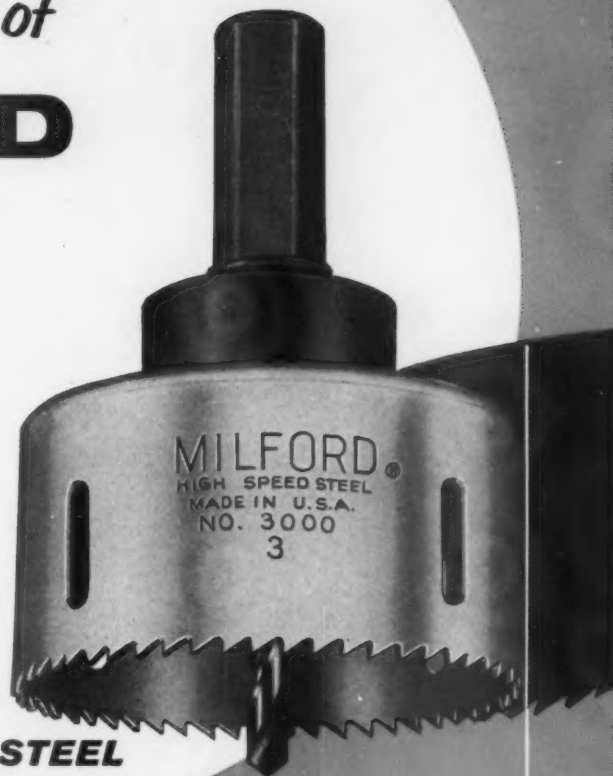
After a visit to the plant of the Wallingford Steel Co. nearby, the Purchasing Agents Association of Connecticut held its annual meeting on November 22nd at Restland Farm in Northford. The evening had been planned as Executives' Night and some 200 members and their guests turned out. They were well repaid if only by the masterly address of the guest speaker, George A. Renard, exec. sec., N.A.P.A. At the meeting, members heard the report of the nominating committee and proceeded to elect officers for 1956.

New!
A Complete Line of
MILFORD
HOLE
SAWS

SHATTERPROOF

**CUT CLEAN, ROUND
 HOLES IN PRACTICALLY
 ANY MACHINABLE
 METAL OR OTHER
 MATERIAL**

HIGH SPEED STEEL



WIDE DIAMETER RANGE

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TO 6"

WELDED EDGE BLADE CONSTRUCTION

...using the finest high speed steels, provides unusually hard, sharp, fast-cutting, long-wearing teeth combined with a tough, resilient back. The result is a shatterproof blade that takes the roughest use in stride.

A COMPLETE SELECTION OF ARBORS

...including "follow thru" type. All include high speed steel pilot drill and are equipped with drive pins for the larger diameter saws. Also available are arbor adapters allowing use of hole saw arbors in Morse taper sockets.



THE HENRY G. THOMPSON & SON CO.
Saw Blade Specialists for Over 75 Years
NEW HAVEN 5, CONNECTICUT
Profile Blades and Band Saw Blades
Hand and Power Hack Saw Blades

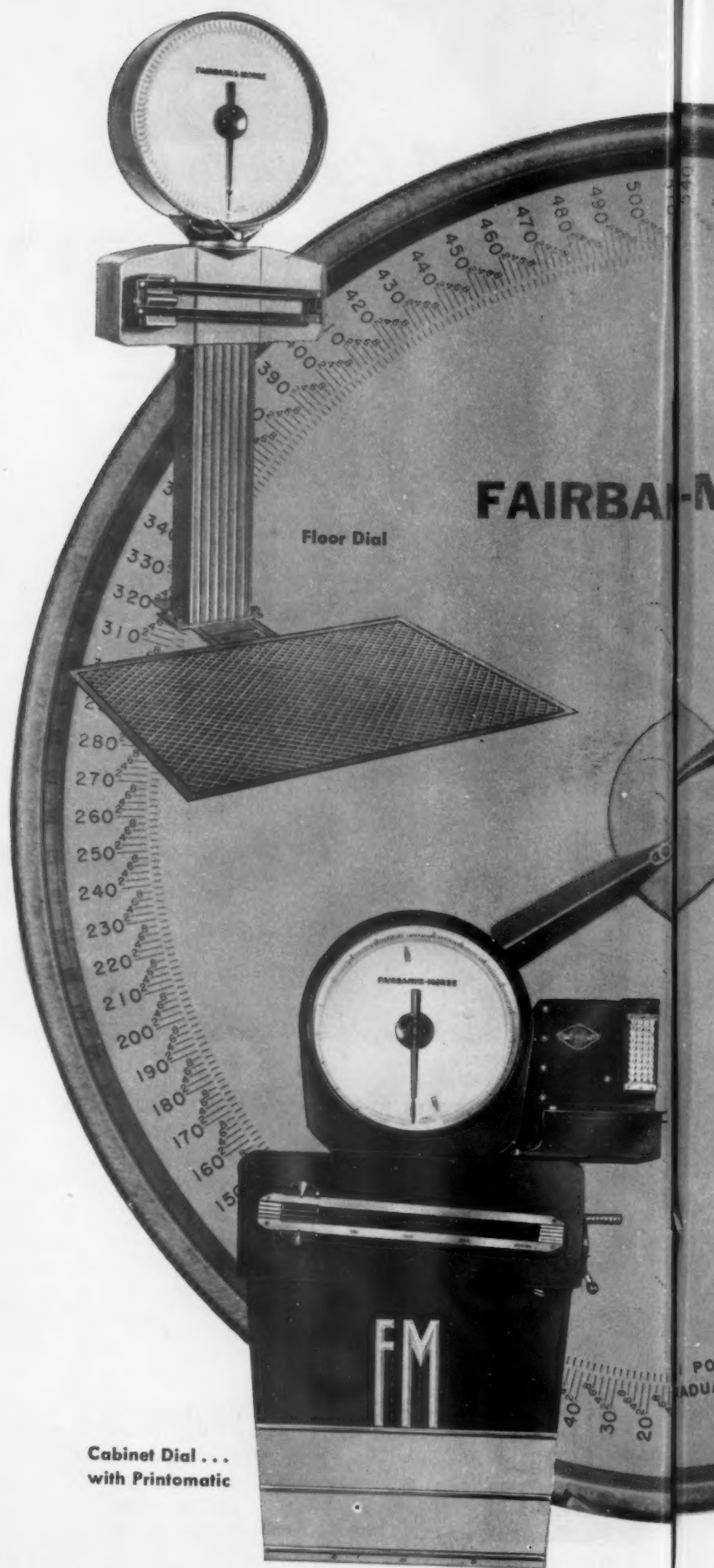
**BUY FROM YOUR
 MILFORD
 DISTRIBUTOR**
 a Local Businessman, and:

Save Time... through local availability
Cut Buying Costs... one source of supply
Reduce Inventory... he carries a stock

For More Information Circle No. 317 on Inquiry Card—Page 17

JANUARY, 1956

announcing:



**Cabinet Dial ...
with Printomatic**



Fairbanks-Morse

floaxial dial scales

EASY TO READ...

EASY TO USE...

LASTINGLY ACCURATE

Everything you've ever wanted in a dial scale, you'll find in the completely new... completely different Fairbanks-Morse line!

Fairbanks-Morse engineers designed the new line with your needs in mind... based on exhaustive field reports. They're streamlined... easy to read... easy to use... rugged to resist shock loads and rough handling... easy to service and maintain. And, above all, they have the new, patented *Floaxial* dial mechanism that assures enduring accuracy. There are no knife edges or pinpoint pivots to wear and affect long-life accurate weighing.

Dial chart and indicator are designed for easiest reading—ever! There's nothing to distract the eye... you get faster, easier weight indication... less chance for reading errors. Dial head swivels a full 360 degrees for easy reading at any angle!

For the complete, time-saving, cost-saving story on the new Fairbanks-Morse Dial line, see your Fairbanks-Morse Weighing Expert or write direct, on your letterhead, for new, colorful, descriptive bulletin on the type of *Floaxial* dial you want. Address Fairbanks, Morse & Co., Dept. P-1, 600 S. Michigan Ave., Chicago 5, Ill.



FAIRBANKS-MORSE

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SCALES • PUMPS • DIESEL LOCOMOTIVES AND ENGINES • ELECTRICAL MACHINERY • RAIL CARS • HOME WATER SERVICE EQUIPMENT • MOWERS • MAGNETOS

For More Information Circle No. 318 on Inquiry Card—Page 17

JANUARY, 1956

241

HAND INJURIES

cost you plenty...



HAND PROTECTION

can be costly, too!

YOU CAN REDUCE BOTH COSTS WITH JOMAC HR GLOVES

Protect your workers with Jomac HR Gloves—and you'll cut your annual bill for safety way down! Jomac HR's provide rugged, dependable hand protection. Made of famous loop-pile Jomac Cloth, they cushion hands against sharp or heavy objects—insulate them against heat. And Jomac HR's really take the bite out of your glove costs—because they last and last. Here's why:

- they're made of long-wearing brown-and-white mock twist yarn
- they're interchangeable; any two make a pair, so each pair provides four long-wearing surfaces
- they can be washed or reconditioned many times over
- on-the-job tests have proved they outwear other gloves by a margin of 3 to 1!



Try Jomac HR Gloves for dependable protection and long, economical wear. Jomac makes a complete line of work gloves and wrist-to-shoulder protection. Send for prices and complete details.

JOMAC INDUSTRIAL GLOVES

PLANTS IN PHILADELPHIA, PA., AND WARSAW, IND.
IN CANADA: SAFETY SUPPLY COMPANY, TORONTO

• SEND COUPON FOR NEW JOMAC GLOVE CATALOG



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For More Information Circle No. 319 on Inquiry Card—Page 17

association news

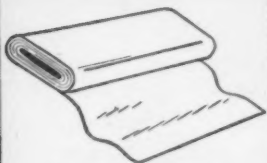
R.I. Association Learns About Plastics

The November dinner of the Rhode Island Purchasing Agents Association was held at the Narragansett Hotel, Providence, on November 28th. No one who attended should in future fail to be an expert in his plastics procurement. The great speaker of the evening, David A. Jones of Celanese's Market Development Dept. had chosen as his subject, "Plastics in General." He lucidly expounded what plastics will and will not do and what properties to look for in buying. At the same meeting, William J. Manchester, chairman of the Committee on Education of the PA Association of Connecticut gave the details of a most successful educational problem conducted by that association. James Birmingham is to be congratulated for his missionary zeal in disposing of sixty copies of *Standardization Manual* during the evening.

Central Mich. Ass'n Get What They Wanted

The members of the Purchasing Agents Association of Central Michigan, had indicated that they wanted more elucidation on "The Value of a Purchasing Manual to Purchasing Management." So, at the dinner meeting on November 15th at the Skiline Room-Famous Grill, Lansing, Mich., an authority was brought from 600 miles away to develop the theme. He was C. Warner McVicar, director of purchasing and traffic, Rockwell Mfg. Co., Pittsburgh, Pa. With a broad experience in the organizational and administrative phases of purchasing, personnel training, and buying supervision, it is no wonder that the speaker developed his subject most convincingly. (Please turn to page 244)

FOR SULFONATIONS SULFATIONS



Textile Specialties



Petroleum Fractions



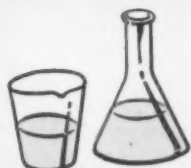
Pharmaceuticals



Fatty Acids

Use SULFAN[®]

(Stabilized Sulfuric Anhydride)



Dye Intermediates



Synthetic Detergents



Lubricant Additives



Agricultural and Industrial Emulsifiers

... Here's Why!

You Improve Sulfonation Efficiency. SULFAN has 99.5% SO_3 available for sulfonation reactions. In many applications, this means considerable savings in operating costs because SULFAN offers nine times as much usable SO_3 as 100% sulfuric acid, and over three times as much as 20% oleum.

You Increase Batch Sizes. With SULFAN, there is no waste acid. This means larger batch sizes (or more rapid through-put) ... often double without increasing size of equipment! Since no water is formed when

SULFAN is used for sulfonation, the waste acid problem inherent with sulfuric acid or oleum is also eliminated.

Benefits of operating efficiency, ease of handling and waste acid elimination make SULFAN worth your prompt investigation. Write today for technical information. A letter outlining your specific needs will enable us to supply data of value to you. As always, information regarding your process will be held in strict confidence.



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Chemical

Basic Chemicals
for American Industry

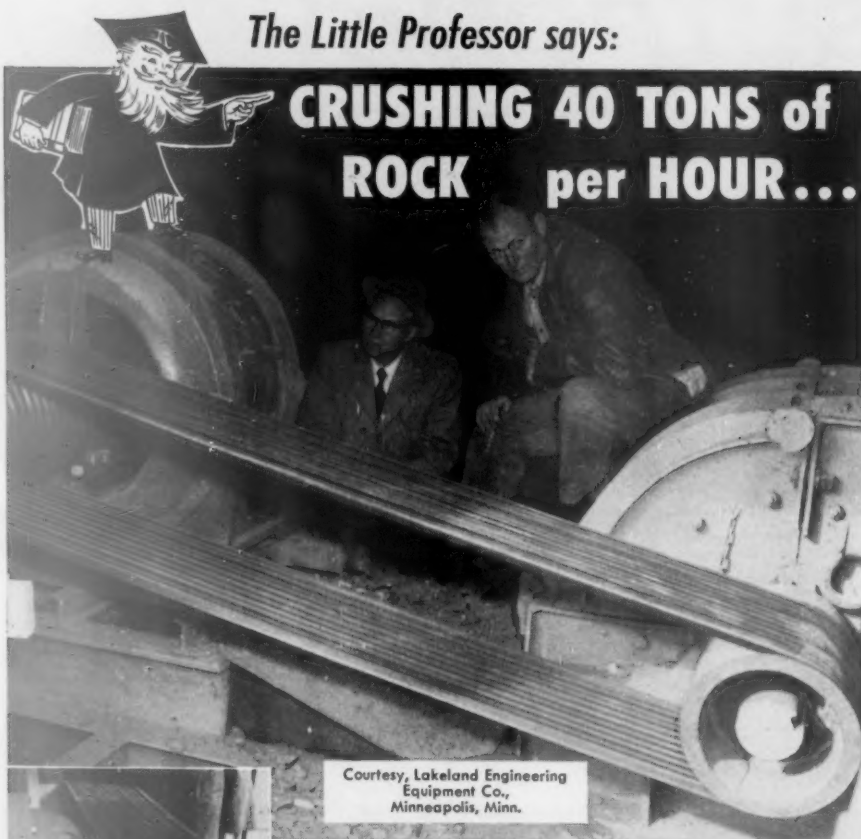
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GENERAL CHEMICAL DIVISION

ALLIED CHEMICAL & DYE CORPORATION

40 Rector Street, New York 6, N. Y.

For More Information Circle No. 320 on Inquiry Card—Page 17



Courtesy, Lakeland Engineering Equipment Co., Minneapolis, Minn.

Calls for rugged, Power Balanced DURKEE-ATWOOD V-BELTS!

Demanded by Ochs Brick and Tile Company of New Ulm, Minnesota is long belt life from the multi V-belts used in their heavy-duty crusher. That's why their plant superintendent, Don Schrepfer (at right in photo) selected Durkee-Atwood vertically balanced and matched V-belts . . . to keep brick production at 25,000,000 per year . . . serving building needs throughout North Dakota, South Dakota, Minnesota, Wisconsin, Illinois and Iowa.

Mr. Schrepfer's supplier, Oscar Ulrich (at left in photo), of Lakeland Engineering Equipment Co., Minneapolis, says: "Durkee-Atwood's dependable factory engineering service enables us to guarantee superior V-belt performance for our customers."

CALL ON DURKEE-ATWOOD. Let D-A's experienced distributor and factory experts help you with your power transmission problems. Find out today about this valuable service to industry . . . no obligation!

This vertically balanced set of 12 Durkee-Atwood heavy-duty V-belts at the Ochs Plant, is typical of Durkee-Atwood matched belt installations. D-A belts are matched vertically . . . there's no "sag" error . . . each belt is tested individually . . . that's why D-A guarantees matchability.



FREE!

Send for your free copy of
"Handy Tips on V-belts and V-drives."

See your D-A distributor or write Dept. P-1 for catalog that includes conversion tables, engineering data, latest Rubber Manufacturers Association horsepower ratings, drive selections and helpful Do's and Don'ts of V-belt operation.

DURKEE-ATWOOD COMPANY

Manufacturers of MINNEAPOLIS 13, MINNESOTA

DURKEE ATWOOD V-BELTS

MOLDED RUBBER

V-BELTS

SPONGE RUBBER SHEETING

DOR-TITE

TAPE

association news

(Continued from page 242)

vincingly. Another requested feature at the same meeting was a brief talk by a member on "Kncw My Company." It was given by Johnny Griffiths, purchasing agent, Francis Aviation.

Under the joint chairmanship of Ron and Mrs. Weger, a splendid program had been arranged for the Christmas Party and Ladies Nite held at the Walnut Hills Country Club. Tuesday, December 13. There was a turkey dinner with all the trimmings, many fine door prizes, gifts for the ladies, melodious bee-bop dinner music by Brian Grinnell's fine combo, an hour for games and finally dancing from 9:00 P.M. on.

Cleveland Ass'n Honors Past Presidents

The November regular meeting of the Purchasing Agents Association of Cleveland held in the Rainbow Room of the Hotel Carter was planned as Past Presidents' Night. Hearty tribute was paid to those men who contributed so much to the present flourishing state of the association—its past presidents. It was a doubly signal occasion because the guest speaker of the evening was one of these men, Clarence Head, the 12th president, serving in 1927-28. He is now assistant treasurer of ALCOA in Pittsburgh. At the forum, preceding the dinner, a current favorite topic of conversation was discussed, "Control of Sales Interview Time." Loring Raymond, of Westinghouse, served as moderator. Leo Boylan, salesman for The W. M. Pattison Supply Co., served as a panel member to give the salesmen's viewpoint. The other panel member was Jack Spaulding, Cleveland Diesel Engine Division.

For More Information Circle No. 322
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PURCHASING

FOR DUSTS



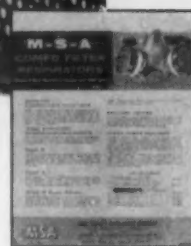
M-S-A DUSTFOE 66

Improved for better, more comfortable face fit, and reduced breathing resistance. More sponge stock, plus special contour design gives an automatic fit, that assures an airtight seal without adjustment. Larger exhalation valves improve breathing. Valves are spring-retained to avoid variations in breathing ease, and to prevent accidental removal. Filters dusts and mists.* Write for detailed bulletin.



M-S-A COMFO FILTER

New facepiece compound never feels clammy, won't harden, or "set" in distorted shapes; provides greater wearing comfort, durability. Three interchangeable filters—(1) dusts not significantly more toxic than lead;* (2) dusts, mists, metal fumes;* (3) toxic aerosols and *extremely* fine particles. The new Comfo Filter Respirators are smaller, lighter than previous models. Write for detailed bulletin.



Here's the NEW—IMPROVED M-S-A RESPIRATOR LINE

FOR CHEMICALS
AND VAPORS



M-S-A GASFOE

Better looking, light weight, compact, comfortable. Add to these features the four different single cartridges that are interchangeable and easily replaceable and you see why the new Gasfoe is tops. Cartridges available—GMA* for organic vapors; GMC for acid gases and/or organic vapors; GMD for ammonia concentrations; MERSORB for metallic mercury vapors. Write for detailed bulletin.



M-S-A COMFO CARTRIDGE

Redesigned for greater comfort, protection. New facepiece keeps its shape, does not harden or set, resists facial oils. The new cartridge design extends breathing protection life, and reduces resistance. Four interchangeable cartridges protect against organic vapors,* acid gases, ammonia, or metallic mercury vapors. Filters available for dust protection.* Write for detailed bulletin.



*U.S. Bureau of Mines Approved



Call the M-S-A man on your every safety problem
... his job is to help you

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At your Service: 76 Branch Offices in the United States

MINE SAFETY APPLIANCES CO. OF CANADA, LTD.

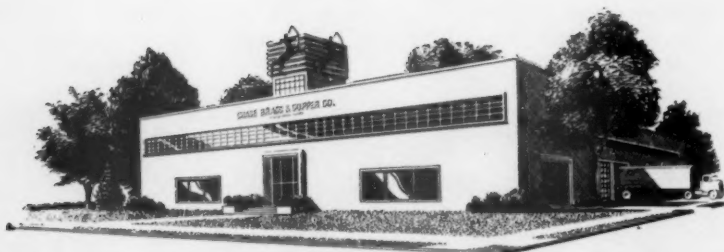
Toronto, Montreal, Calgary, Edmonton, Winnipeg, Vancouver, Sydney, N.S.
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CHASE[®]

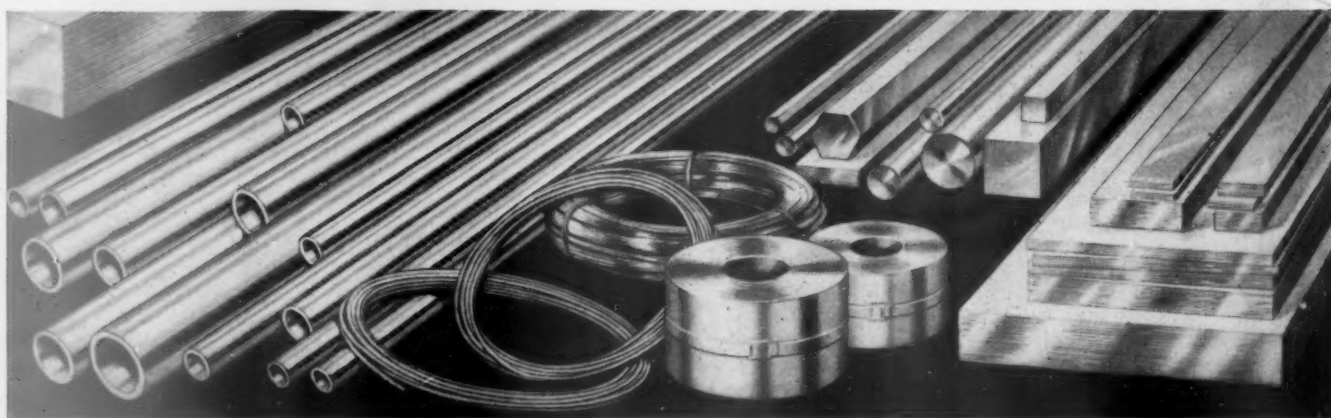
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Illustrated above: Just three of the 25 efficient Chase warehouses dotting the nation.

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CALL THE CHASE WAREHOUSE NEAR YOU!

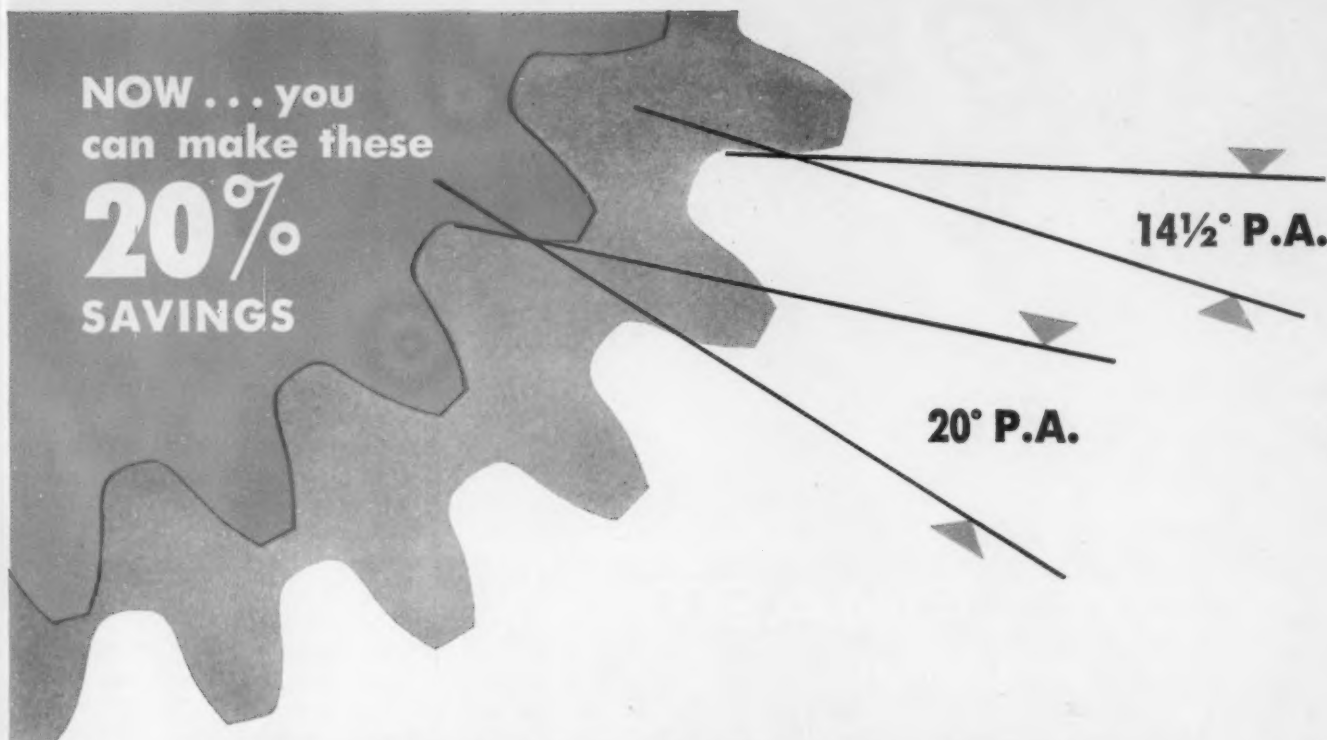
The Nation's Headquarters for Brass & Copper (sales office only)

Atlanta	Chicago	Denver	Indianapolis	Minneapolis	Philadelphia
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Boston	Cleveland	Grand Rapids†	Los Angeles	New Orleans	Providence
Charlotte†	Dallas	Houston	Milwaukee	New York	Rochester†
	St. Louis	San Francisco	Seattle	Waterbury	

For More Information Circle No. 323 on Inquiry Card—Page 17

NOW... you
can make these

20%
SAVINGS



with **20° PRESSURE ANGLE GEARS**

BOSTON GEAR now offers **441 Standard Stock Sizes**

Every engineer knows the mechanical advantages of the 20° P.A. tooth form. It's the standard for automotive drives, and wherever highest efficiency, with economy of space, weight, and cost are essential.

Now, BOSTON GEAR has the answer to the question of *availability*. A full range of *standard stock* sizes, supplied by all BOSTON GEAR Distributors, makes it practical to specify the 20° P.A. for virtually all spur, bevel, and miter gear applications.

Start making this big saving you've been missing. For details, call your BOSTON GEAR Distributor, or write: Boston Gear Works, 74 Hayward St., Quincy 71, Mass.

BOSTON GEAR CATALOG lists Standard Stock Sizes of 20° P.A. Spur, Bevel, and Miter Gears, along with the conventional 14½° P.A. Gears for every requirement. Ask for your copy.

COMPARE:
SAME RATIO
SAME HP

SAVE 20%
IN SPACE, WEIGHT,
AND COST

Example:

	14½° P.A.		20° P.A.	
	Pinion	Gear	Pinion	Gear
Pitch Diam.	2"	8.4"	1.66"	7.00"
Center Distance	5.200		4.333	
Weight	1 lb.	7½ lbs.	¾ lbs.	5 lbs.
List Price	1.95	8.65	1.70	6.70

Call your

BOSTON
DISTRIBUTOR *gear*



For nearest Distributor,
look under "GEARS",
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**7124 "OFF-THE-SHELF" TRANSMISSION PRODUCTS
FROM YOUR LOCAL DISTRIBUTOR — AT FACTORY PRICES**

For More Information Circle No. 325 on Inquiry Card—Page 17

56BG-G-18



THE CYCLEMASTER by UDYLITE

for High Production . . . Lower Cost Plating



Special alloy carriers
for high conductivity.



Variable rack spacing
—one man operation.



Compact design requires
minimum floor space.

The Udylite Cyclemaster is a new, completely automatic plating machine which offers the greatest production of any machine built with comparable floor size.

A versatile, standardized machine, it is adaptable to most plating processes. The initial cost is low, considering its high production capacity. One man can keep it operating at full capacity.

The Cyclemaster will handle up to 120 racks per hour and take a rack up to 16" by 36". Being only 14 feet, 6 inches in length and moveable, it will fit into most straight line production operations.

All Cyclemaster units are equipped with a new multi-purpose carrier which can be used for double or single spline racks. Made of special alloy metal, it has high structural strength and highest conductivity.

Built on a rugged steel base, it is easily moved and installed. It can be shipped as a complete unit or in two sections which require only bolting together.

Like all Udylite automatics, the Cyclemaster is completely assembled at the factory and run in before being shipped. Each machine incorporates Udylite features of design and construction that have been so well accepted by the plating industry. The drive is hydraulic.

For more details of the Cyclemaster—or any other Udylite equipment—consult your local Udylite representative or write today to The Udylite Corporation, Detroit 11, Michigan.



WORLD'S
LARGEST
PLATING
SUPPLIER

association news

Dinner Dance Held By Lehigh Valley Ass'n

Members of the Purchasing Agents Association of the Lehigh Valley, Inc., their guests and ladies tripped the light fantastic with abandon at a highly successful and enjoyable annual dinner dance held at the Hotel Easton, Bethlehem, Pa., on December 2nd. At the November meeting held two weeks previous on the 14th at the Bethlehem Club, there was an innovation in the form of a panel discussion, centering around basic purchasing procedures. It was conducted by J. C. Pearson as leader with R. W. Mutchler, E. C. Davis, J. J. O'Donnell and W. F. Diehl as panelists. The many questions raised by members showed the interest aroused by the discussion and it was agreed that more sessions of this nature should be held in the future.

Lincoln Electric Co. Executive Addresses Syracuse PAs

The November dinner meeting of the Purchasing Agents Association of Syracuse and Central New York was highlighted by the address of James F. Lincoln, chairman of the board, Lincoln Electric Co., Cleveland, Ohio. A recognized authority on incentive management and an author of a book on the subject, he most lucidly explained the principles involved before a full attendance of the association in the Roof Garden of the Hotel Onondaga. A lively discussion followed with president J. G. Straffella acting as moderator. The gala Xmas party held on the evening of December 15 at the Hotel Onondaga was pronounced an outstanding success by the large crowd that attended. Chairman E. C. Drew and his committee deserve orchids for the fine program they had arranged.

For More Information Circle No. 326
←on Inquiry Card—Page 17

PURCHASING

STEEL SERVICE FROM COAST TO COAST

Our nine strategically located plants in the East, South, Middle-West and West Coast areas are ready to serve you day and night, seven days a week, in the most friendly, dependable manner. These products and complete processing service on them are always available —

- ★ Sheet and Strip in all finishes, tempers and carbons — HR, HRP and CR
- ★ Carbon Bars, HR and CF
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- ★ Angles ★ Beams ★ Plates ★ Shapes
- ★ Galvanized Sheet and Strip
- ★ Long Term ★ Tin Mill Products
- ★ Seamless and Welded Tubing
- ★ Tool and Maintenance Steels
- ★ Drill Rod

"for service
dependable as the sun"

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Modern, high speed, low cost Processing Services

from 9 plants.

For More Information Circle No. 327 on Inquiry Card—Page 17

**For
SPECIAL
HINGES
and
STAMPINGS
for this
booth...**

STANLEY got the call

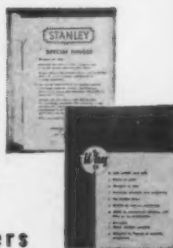
Available for service 24 hours a day, exposed to all kinds of weather, this all-aluminum outdoor telephone booth, designed by the Bell Telephone System, had to be serviceable in every detail. That's one reason why Stanley got the call to provide special stainless steel hinges and stampings.

Stanley supplied hinges and stampings (above) that control the folding action of the door and hinges that affix the door to the booth. These hinges had to meet rigid functional requirements. (Note that the uppermost hinge is spring-loaded.) They had to be produced in large quantities, yet economically.

COMPLETE FACILITIES . . . COMPLETE SERVICE

Your hinge and stamping requirements may be similar . . . or differ greatly. In any case, Stanley can meet your needs. That's because Stanley has the know-how and complete facilities required . . . its own steel mills, testing and research laboratories, product design, tool-making and finishing departments. For **your** special hinges and stampings call on Stanley . . . now.

Write Today For Free Folders



PRESSED METAL DIVISION
DEPT. A, THE STANLEY WORKS
874 LAKE STREET, NEW BRITAIN, CONN., U.S.A.

STANLEY TOOLS • STANLEY HARDWARE
STANLEY ELECTRIC TOOLS • STANLEY STEEL STRAPPING • STANLEY STEEL
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association news

PA Ass'n of New York Honors "Al" Soell

There was a large turnout at the Hotel New Yorker on November 15th at the National President's Night held by the Purchasing Agents Association of New York in honor of A. W. Soell, president N.A.P.A. Other officials of N.A.P.A. welcomed as special guests were George A. Renard, secretary treasurer and Howard Ahl, who recently joined the staff of N.A.P.A. Also a special guest was Wilson B. Wight, national v.p., District 8, N.A.P.A. In his inspiring speech, President Soell gave some of the highlights of his extensive travels visiting local associations, throughout the U.S. and Canada. His observations had particular reference to purchasing activities.

At the forum, preceding the dinner, the subject under discussion was "Engineering Subcontracts For Electronic Computer Projects." It was developed by guest speaker, Richard N. Sweetland, manager, subcontract engineering, IBM.

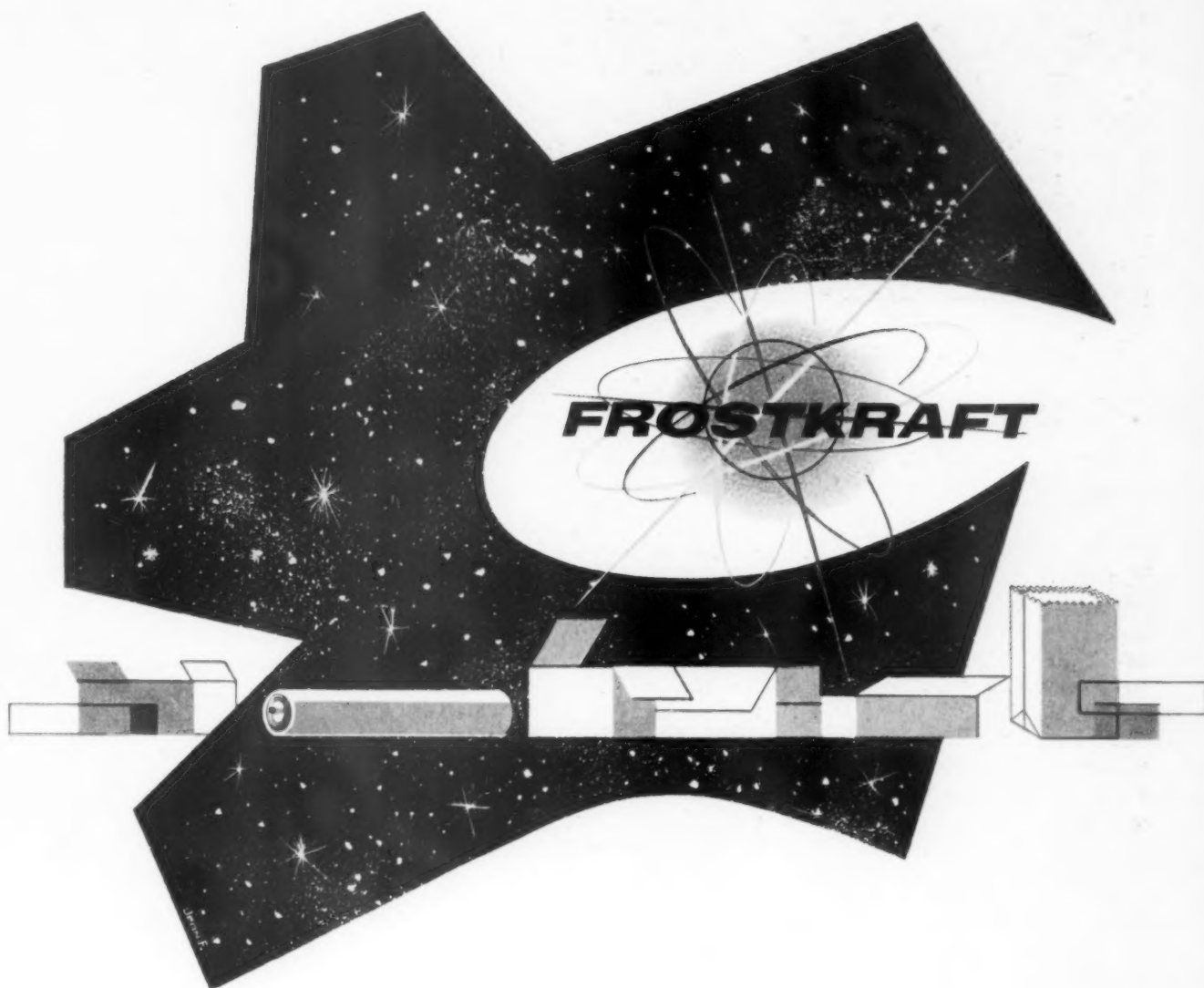
NE. Ass'n Visits Materials Handling Plant

On November 15th, members of the New England Purchasing Agents Association had an opportunity from 2:00 pm to 4:30 to inspect the manufacturing facilities of Lewis-Shepard Co., at their Watertown, Mass., plant. They saw all the processes involved in the manufacture of materials handling equipment, followed by a demonstration of some of it in action. After the tour, light refreshments were served. Many thanks to member Frank A. Gray, the company's purchase manager for arranging the visit.

For More Information Circle No. 329
on Inquiry Card—Page 17→

PURCHASING

the new name to watch in KRAFT packaging—



... better products through cellulose chemistry

by OLIN MATHIESON

The name FROSTKRAFT is the newest "package" in high-strength kraft products — shipping containers, multi-wall sacks, grocery and specialty bags.

The Forest Products Division of Olin Mathieson Chemical Corporation has created a new combination of resources, facilities and know-how... united behind the product name — FROSTKRAFT! To the great Frost timber and lumber industries have been added the recently acquired kraft paper operations of the former Brown

Paper Mill Company, Brown Container Corporation, Brown Paper Industries, Inc., Krafco Container Corporation and Negley Bag and Paper Company.

Olin Mathieson brings to FROSTKRAFT many years of intensive research and leadership in cellulose chemistry... scientific packaging... basic industrial chemicals. This unique combination of resources and industrial skills is now being applied to the continued development of FROSTKRAFT paper products.

FOREST PRODUCTS DIVISION
WEST MONROE



OLIN MATHIESON CHEMICAL CORPORATION
LOUISIANA

purchasing people

in the news

Arthur J. LeVasseur has been named purchasing agent for the three Bristol divisions of Associated Spring Corp., Bristol, Conn. The divisions are Wallace Barnes Co., Dunbar Bros. Co., and F. N. Manross & Sons. Mr. LeVasseur had been assistant purchasing agent. He joined Dunbar Bros. division in 1935 as an office boy and clerk, becoming head of the cost estimating and planning department one year later. In 1941 he was made foreman of the Dunbar division's war-time 20 mm ammunition link department. In 1943 he was named assistant plant manager. Since October, 1947, he has been assistant purchasing agent for the three divisions of the corporation. He is a member of the Purchasing Agents Associa-

tion of Connecticut, serving as a director during 1952. Succeeding Mr. LeVasseur as assistant purchasing agent is **John M. Reilly**. He was previously a buyer in the purchasing department. Mr. Reilly joined the Wallace Barnes division in 1950 in the slitting and filing department at Forestville, Conn. Two years later he was transferred to the steel production department, and in 1953 was made a buyer in the purchasing department.

George C. Sweet has been made director of purchases for Reichhold Chemicals, Inc., White Plains, N. Y. Mr. Sweet, who had been Reichhold's central purchasing agent since 1953, origi-

nally joined the firm's Export Department in 1947. Previously, he had been a member of General Electric's accounting department in Bridgeport, Conn.

Otis Zumwalt has been appointed director of purchasing for Thomas Industries, Inc., Louisville, Ky.

Ransom B. De Lisle has joined Niagara Machine & Tool Works, Buffalo, N. Y., as purchasing agent. He was formerly with Pittsburgh Metallurgical Co., Inc. as general purchasing agent and traffic manager, and with New York Central System's engineering department.



A. J. LeVasseur



G. C. Sweet



R. B. DeLisle

MONEY-SAVERS!

8972 "Pro Safety"
leather combination



475 "Scraper"
leather combination,
with knit wrist



444 "Plastic-Dot"
with knit wrist



LEATHER WORK GLOVES
that need no break-in...
"PLASTIC-DOT" GLOVES
that save 40%...full-size,
TRUE WEIGHT CANTONS...
all delivered rapidly
and priced right!

Save with Riegel leather work gloves that need no finger-tiring break-in, canvas glove comfort with leather glove wear... made to give more hours of work!

Save with "Plastic-Dot" gloves (originated and perfected by Riegel) guaranteed to outwear 2 or more pairs of regular canvas gloves...cut your costs 40% or more!

Save with canton flannel gloves...quality-controlled by Riegel from fabric to finished product...always full size, full weight, comfortable, long wearing!

Fast dependable deliveries from local warehouses. Send now for catalog!

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from every... **BELT** by **HAMILTON**



Eighty-five years of concentrated experience in serving industry . . . building belts that do the toughest jobs longer for less through improved fabrics and fibers . . . longer-lasting rubber compounds . . . up-to-the-minute construction techniques.

The result? Belting that carries more tonnage more miles per shift . . . that actually costs less over the life of the belt.

How can you know this? A trial in your own operation will furnish positive evidence. Call your nearest Hamilton Distributor.

**Breaker fabric available if required*

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If you would know more about Hamilton and our complete line of Industrial Rubber Products Hose . . . Belts . . . Packings and Mats write, wire or 'phone today for our all new Catalog. A copy belongs in your reference library.



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Always dependable!

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Straight, unspliced duck plies improve flexibility and provide a truer running belt. Maximum friction and cover tensiles of the individual grades specified.

Rubber frictions applied to thoroughly dried duck insure complete penetration of the fabric.

Skim coat, extra thickness of rubber between all plies increases adhesion between the plies and between the carcass and cover. Enables belt to withstand flexing over smaller pulleys without ply separation. Also gives added protection against moisture reaching the inner duck plies from cuts or gouges in belt cover.

purchasing people

The appointment of **Lloyd Bryant** as stores manager for **United Air Lines** at Chicago has been announced by **D. V. O'Leary**, director of purchasing and stores.



L. Bryant

Mr. Bryant joined United in 1936 as a storekeeper at Cheyenne. In 1946 he became stores representative-western division, and in 1949, assistant stores manager at San Francisco. He was most recently assigned to United's Denver Operating Base, where he set up a new stores facility.

CORRECTION



H. G. Greene

In the December issue of **PURCHASING**, this photo of **Henry G. Greene**, new purchasing agent for **Continental Gin Co.**, **Birmingham**, was incorrectly captioned.

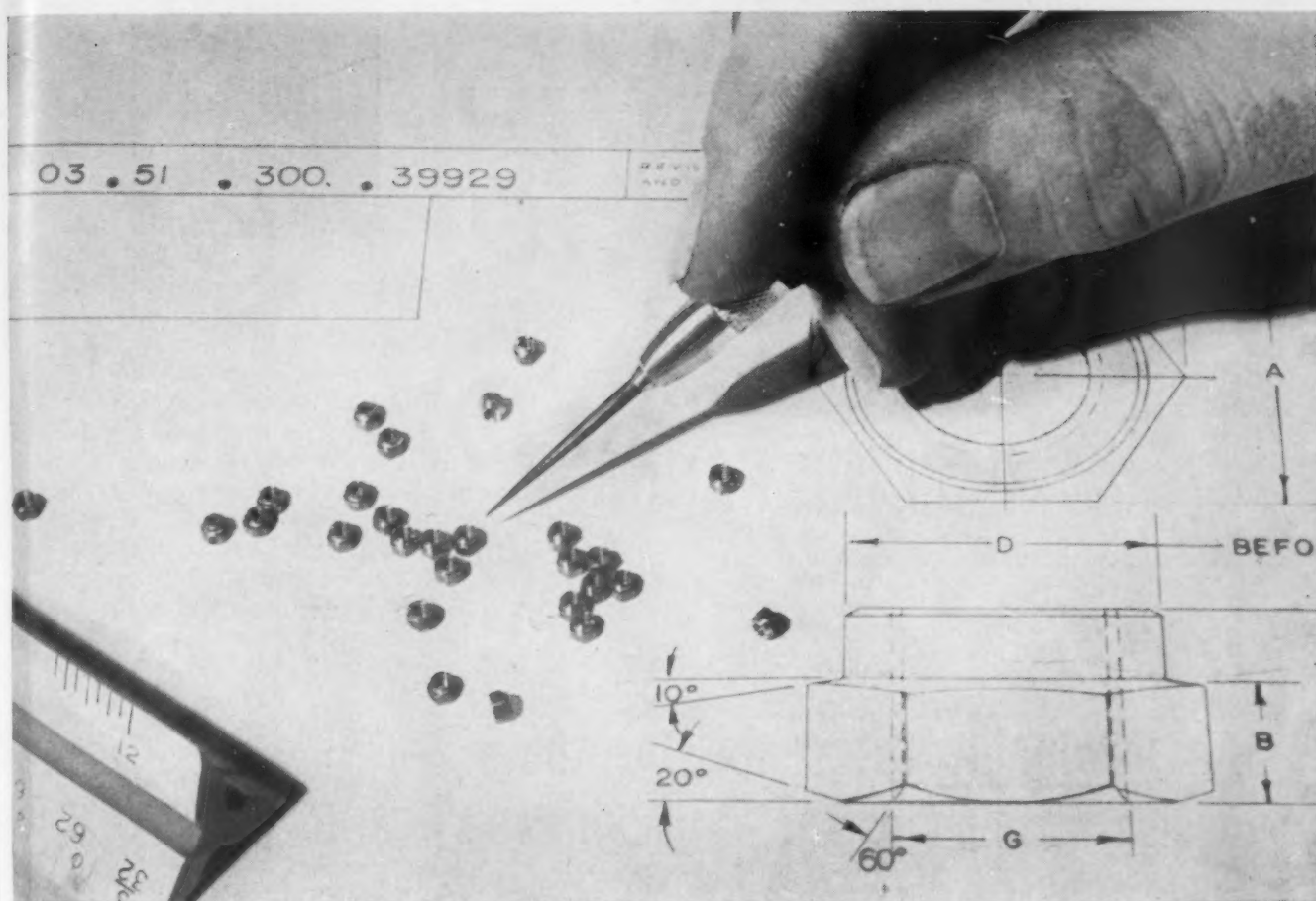
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IASING



FLEXLOC Micro locknuts meet designers' needs for tiny precision nuts that retain strength and holding power in the smallest assemblies—servomechanisms, electronic and electrical equipment, all miniature devices.

Design Lighter, More Compact Products with New FLEXLOC Micro Nuts

Standard Miniature Locknuts Permit Design Engineers to Develop and Fasten Smaller Assemblies Safely

SIZE	Across Flats		Shoulder Height		Across Corners	Height +.000 -.003
	MAX.	MIN.	MAX.	MIN.	MIN.	
0-80 NF-3B	.111	.107	.047	.042	.123	.075
1-64 NC-3B	.127	.123	.0635	.0585	.141	.090
1-72 NF-3B	.127	.123	.0635	.0585	.141	.090
2-56 NC-3B	.158	.153	.068	.063	.176	.105
2-64 NF-3B	.158	.153	.068	.063	.176	.105
3-48 NC-3B	.190	.183	.071	.066	.210	.120
3-56 NF-3B	.190	.183	.071	.066	.210	.120
4-40 NC-3B	.190	.183	.072	.067	.210	.120
4-48 NF-3B	.190	.183	.072	.067	.210	.120

STANDARD FLEXLOC Micros—in sizes ranging from 0-80 to 4-48—are available in brass (either plain or cadmium plated). Consult SPS for miniature nuts of other conventional materials.



New FLEXLOC Micro locknuts are smaller and lighter than regular FLEXLOCs of the same nominal diameter. Wrenches of smaller size are used to install them. Mating joints or flanges can be designed smaller—with no loss in strength or convenience of assembly.

FLEXLOC Micros have all the advantages of larger FLEXLOCs. One-piece, all-metal construction—nothing to put together, come apart, lose or forget. Use them as lock or stop nuts—they stay put anywhere on a threaded member as soon as the locking threads are fully engaged. Uniform locking torques insure accurate preloading. There are no nonmetallic inserts to pop out or deteriorate. Moisture, dryness, oil, temperatures to 250°F won't affect these Micro nuts. Just screw them on. They lock and stay locked. Vibration won't shake them loose.

For complete information on FLEXLOC Micro locknuts, consult your authorized SPS distributor. Or write STANDARD PRESSED STEEL CO., Jenkintown 31, Pa

STANDARD PRESSED STEEL CO.

FLEXLOC LOCKNUT DIVISION

SPS
JENKINTOWN PENNSYLVANIA

For More Information Circle No. 332 on Inquiry Card—Page 17

JANUARY, 1956

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IF YOU DESIGN OR USE
CYLINDERS AND PRESSES

...you'll want

RHOADS

New **PACKING HANDBOOK**

An invaluable reference for the
design and application of packings



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CUP PACKING

Here it is, just off the press, Rhoads new 56 page handbook on the design and application of hydraulic and pneumatic leather packings!

Every subject from "What is a packing and how it is used" to "Maintenance of Packings" is thoroughly covered.

Written and edited by the leading manufacturers of mechanical leather packings, the data and principles contained in it have been approved by the leather packing industry.

This book is a publication of the National Industrial Leather Association of which J. E. Rhoads & Sons is a member.

As a contributor to this book and the manufacturer of famous Tannate Leather Packings, J. E. Rhoads & Sons will be happy to send you a copy. Please use the coupon below or write on your business letterhead.

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RHOADS

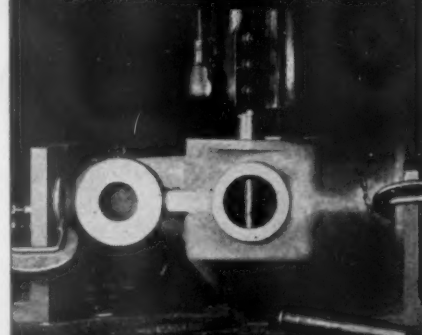
INDUSTRIAL LEATHERS

purchasing
people

Frank M. Reinhold, purchasing agent of The Connecticut Light and Power Co., was elected a vice president at a meeting of the board of directors. Mr. Reinhold's lengthy utility career began in 1923 when he joined CL&P's engineering department at Waterbury. He became chief clerk three years later, and in 1927 was named general storekeeper. He was appointed assistant purchasing agent in 1933, becoming purchasing agent in 1946.

Miles Agan, purchasing agent of Stromberg Carlson, division of General Dynamics Corp., Rochester, N. Y., served as chairman at an American Management Association workshop seminar in New York, Oct. 31-Nov. 2.

33% DECREASE IN DIE WEAR
ON THIS GRAY IRON FITTING



...thanks to

FERROCARBO®

Users everywhere report similar experiences. In fact, on 67 machining tests in 11 large machine shops, castings of gray iron treated with FERROCARBO averaged 89.5% greater machinability per tool than untreated castings. These premium castings are finer-grained, denser, stronger, yet they COST YOU NO MORE...because your foundryman, using FERROCARBO, makes worthwhile savings in raw material costs.

FOR FREE BOOKLET on FERROCARBO, citing actual case histories of faster machining, with longer tool life, write The Carborundum Company, Dept. 35, Niagara Falls, N. Y. 64-55

CARBORUNDUM®

For More Information Circle No. 333 on Inquiry Card—Page 17

For More Information Circle No. 346
on Inquiry Card—Page 17

PURCHASING

On Schedule

First Shipment Made December 15th

...aqua ammonia...nitric acid...anhydrous ammonia (refrigeration grade)

FIRST cars from Sohio Chemical Company rolled down the track December 15.

We worked 'round the clock to meet this early delivery date . . . we are now shipping against contracts from industry's newest, most modern industrial chemical plant.

We're ready to serve your needs . . . faster . . . more economically . . . dependably — with our new line of high-quality, high-purity industrial chemicals.

MAKE SOHIO A PART OF YOUR 1956 PLANS FOR:

Anhydrous Ammonia, commercial and refrigeration grades

Aqua Ammonia • Nitric Acid

Urea • 83% Ammonium Nitrate Solutions

PROMPT SERVICE...UNMATCHED FACILITIES...UNIFORM HIGH QUALITY

- CENTRALLY LOCATED in America's industrial heartland.
- FAST DELIVERY 5 railroads serve Lima — Erie, B&O, Nickel Plate, DT&O, and Penna. — and 24-hr. truck delivery within trucking area.
- LARGEST STORAGE FACILITIES in country in relation to production capacity.
- QUALITY CONTROL every shipment analyzed.
- LABORATORY and technical service.



Ft. Amanda Road • Lima, Ohio

For More Information Circle No. 334 on Inquiry Card—Page 17

JANUARY, 1956

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TAYLOR

Laminated Plastics
Vulcanized Fibre

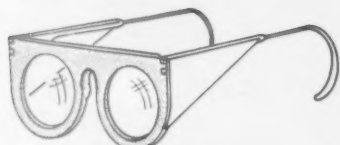
Shop Talk

TAYLOR FIBRE CO.

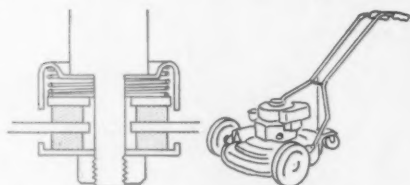
Plants in Norristown, Pa. and La Verne, Calif.

PHENOL—MELAMINE—SILICONE—EPOXY LAMINATES • COMBINATION LAMINATES • VULCANIZED FIBRE • POLYESTER GLASS ROD

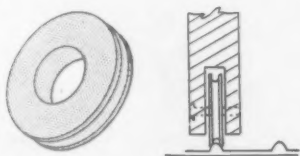
Tips for designers



Frames for industrial eye-glasses, of Taylor Phenolic Laminate . . . are resistant to moisture and acids, possess high physical strength.



Rotary lawn mower utilizes abrasion resistance of Taylor Phenolic Laminate washer in slip-clutch attachment of drive shaft to cutting blade.



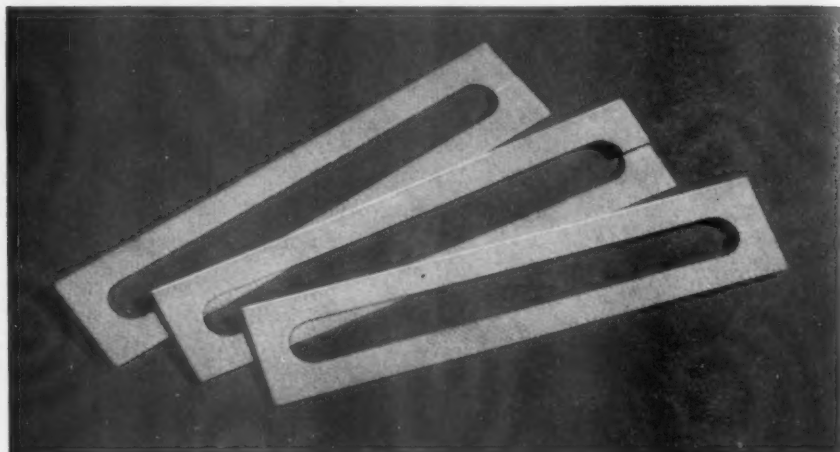
Rollers for flush doors are now being made from Taylor paper base tubing with ball bearing insert . . . providing smooth, silent operation at a low cost.



Automobile clock is securely and economically mounted on inside surface of metal dashboard, with a spacer fabricated from Taylor Vulcanized Fibre.

TAYLOR FABRICATING FACILITIES

Your production problems can often be simplified . . . schedules safeguarded . . . inventory headaches cured . . . and overall costs reduced by having Taylor fabricate finished parts of vulcanized fibre and laminates to your specifications. Efficient, modern facilities are ready to serve you. Write to Taylor about your specific requirements.



Jack & Heintz engineers selected Taylor glass base silicone laminates for dependable insulation of rotor windings in a DC generator for aircraft.

For critical insulation requirements use Taylor glass base laminates

Looking for exactly the right laminate to handle a particularly tough electrical insulation job? You'll find what you need in the many grades of Taylor glass base laminates . . . each using a special formulation of Taylor phenol, melamine, silicone, or epoxy resin. Possessing a broad range of stable insulation qualities and high mechanical strength, these laminates are standard Taylor products rather than "specials" made up at infrequent intervals.

From this group of materials you can select not only the insulation characteristics you need but also any desired combination of: prolonged service at elevated temperatures, resistance to chemical action, retention of physical prop-

erties, and low moisture absorption. And they are available in sheets, tubes and rods, in sizes that afford maximum economy of material usage in your manufacturing processes.

Equally important in your consideration of these laminates are the specialized techniques and facilities of Taylor's Fabricating Division . . . capable of producing parts to your own specifications, promptly and economically.

Plan to take advantage of these high-performance laminates in your present products or those which you are now designing. Call on Taylor for a discussion of your specific requirements . . . for glass base laminates and for efficient fabrication service.

NOW SIMONDS

OFFERS A

Complete Line of "Red Tang" Files

**AMERICAN PATTERN
"AMERICAN-SWISS" SWISS PATTERN
"VIXEN" MILLED CURVED TOOTH
ROTARY FILES and BURRS**

You can now get ANY TYPE FILE YOU NEED from one complete line — SIMONDS! The famous "RED TANG" Line now includes ALL TYPES OF FILES for every purpose: machine shop, saw filing, die making, precision craftsmen, automotive, aircraft, pattern makers, foundries, railroad and shipyards, garages and for special applications.

All are Grade A only . . . backed by SIMONDS reputation for outstanding quality, dependability and service. Call your Simonds Distributor now for ALL your file needs. Ask for "Red Tang" . . . and be sure of the best!

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MILLED
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SAW AND STEEL CO.**

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Canadian Factory in Montreal, Que., Simonds Divisions: Simonds Steel Mill, Lockport, N. Y.
Heller Tool Co., Newcomerstown, Ohio, Simonds Abrasive Co., Phila., Pa., and Arvida, Que., Canada



a century of
experience behind
the
SUPERSTRONG
symbol

SUPERSTRONG stands for timber reserves... saw mills... veneer mills... wirebound, wooden and corrugated box plants... sales offices in many cities. This ownership and control of all materials and facilities — plus the tested experience and reliability of **ONE HUNDRED YEARS** — assure you of an ample supply of accurately designed and correctly manufactured shipping containers at all times. Be sure... specify **SUPERSTRONG**.

RATHBORNE, HAIR AND RIDGWAY BOX CO.
1440 WEST 21st PLACE • CHICAGO 8, ILLINOIS

For More Information Circle No. 337 on Inquiry Card—Page 17

purchasing people

The retirement of one official and new appointments for two others in the purchasing department of the Bay City, Mich., plant of Electric Auto-Lite Co., Toledo, have been announced by J. H. Lambrix, vice president and



H. R. Ricker



B. D. Kimerer



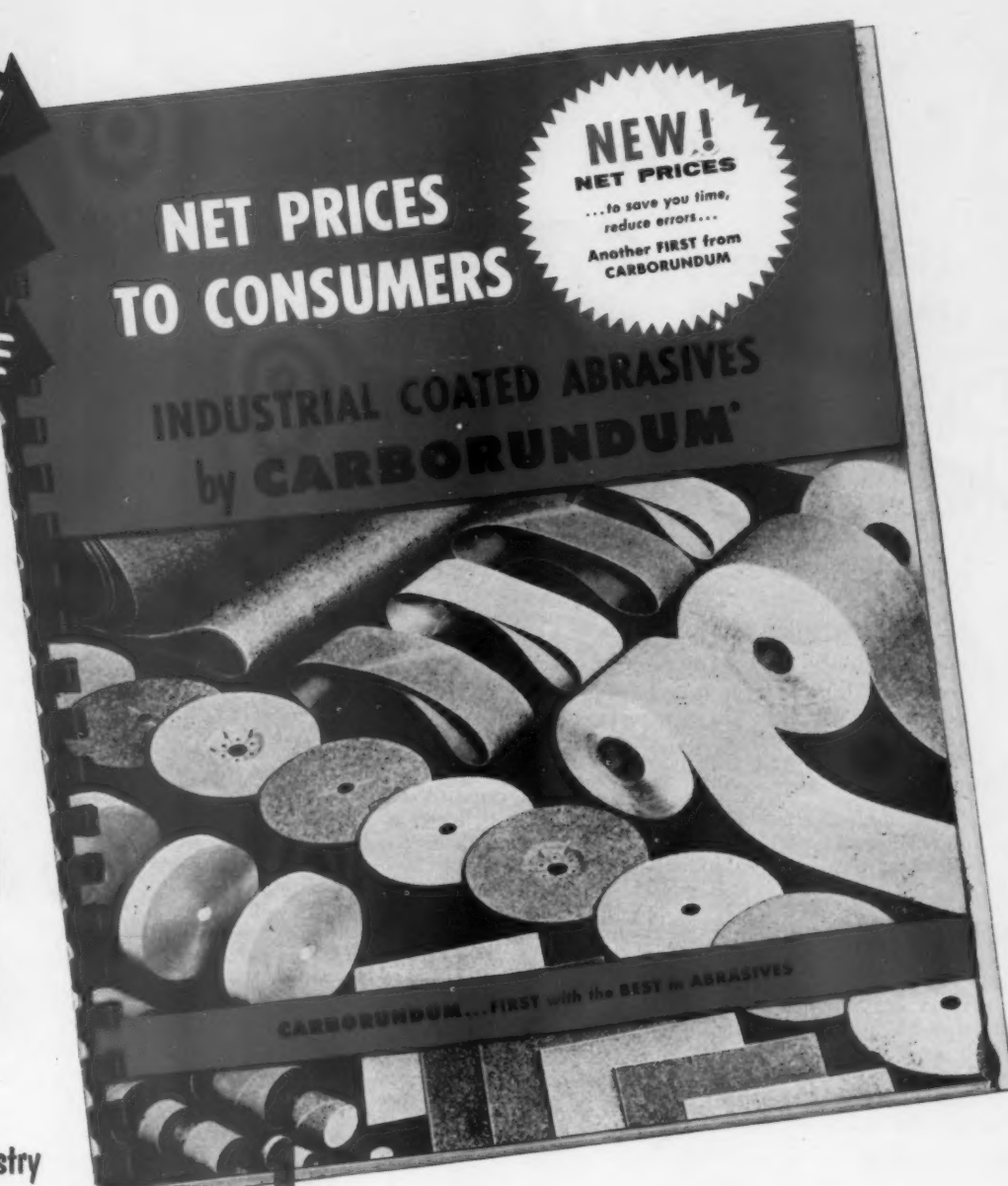
G. H. Bergevin

director of purchasing. **Howard R. Ricker**, assistant purchasing agent, has succeeded **B. D. Kimerer**, who retired after serving as purchasing agent since Auto-Lite began its Bay City operations in 1936. **George H. Bergevin** becomes the new assistant purchasing agent. Mr. Ricker joined the firm in Bay City in 1936 as a clerk in the Materials Control Department. He later became supervisor of materials control and planning. In 1940, he was made assistant purchasing agent. Mr. Kimerer began his career with Willys-Overland in Toledo in 1915. He joined Auto-Lite in 1934 and was made purchasing agent at Bay City in 1936. Mr. Bergevin joined the firm in 1946.

BRAND NEW
SIMPLIFIED
EASY TO USE

THE FIRST NET PRICING SYSTEM

in the
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...from **CARBORUNDUM**
...of course!



● WHAT A BOON TO PA'S (or *anyone* pricing or ordering abrasives)

DO IT YOURSELF! All the information you need is right at your fingertips...no need to waste time phoning for price information...no delay in processing orders.

YOU GET 5 BIG ADVANTAGES:

- 1** Faster, more accurate pricing
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- 3** Speedier delivery
- 4** Simpler record-keeping
- 5** Saving in communication time

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If you haven't already received your copy of CARBORUNDUM's new Net Price Catalog for Industrial Coated Abrasives, call you Carborundum salesman or Distributor—listed in the yellow pages of your phone book under "Abrasives" or "Sandpaper".

**PHONE
FOR YOUR COPY
TODAY!**



For More Information Circle No. 338 on Inquiry Card—Page 17

JANUARY, 1956

82-528

261

YOU *Can* AVOID DIE COSTS COMPLETELY

ON YOUR NEXT
STAMPING ORDER



Yes, you can — but it's not necessarily the best thing for you.

You want the lowest unit cost — for the life of the part, including re-runs. It may well be that our Machine-Cut Method, with no die cost, does work out best.

Or, it might better be our Short Run Method, using economical blanking dies and stock punches.

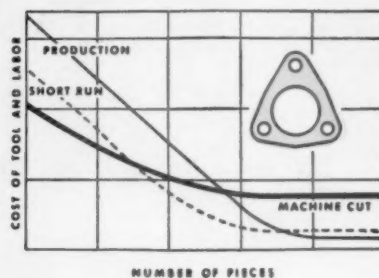
Sometimes, even with very short runs, it pays to use our Production Method with a standard die or our own surprisingly inexpensive Hecht-type tool.

In any case, the decision is a technical one based on many factors, not just length of run. You save money when the correct decision is made.

WE USE ALL THREE METHODS — LET US MAKE AN IMPARTIAL DECISION FOR YOU

For example, take the part illustrated. From 1-65 parts, our Machine-Cut Method is most economical. At 65 parts, the Short-Run Method is best until, at 7,000 units, the standard Production Method is most satisfactory.

These breaking points as charted vary drastically with every stamping, but the general principle remains the same.



Manufacturers of ALL TYPES OF SHIMS

STAMPINGS DIVISION

"ONE PIECE OR ONE MILLION"

STAMPINGS DIVISION, LAMINATED SHIM COMPANY
2401 Union Street, Glenbrook, Conn.

Gentlemen:

Please rush me my free copy of "SERVICE IN STAMPINGS"—the 12-page, illustrated booklet full of helpful facts on the economical buying of stampings.

NAME _____ TITLE _____

COMPANY _____

STREET _____

CITY _____ ZONE _____ STATE _____

For More Information Circle No. 339 on Inquiry Card—Page 17

purchasing people

The appointment of **Daniel R. Simmons, Jr.**, as purchasing agent of the Continental Division has been announced by Ford Motor Co., Dearborn, Mich. Mr. Simmons joined the division as purchasing manager in June, 1955.



D. R. Simmons, Jr.

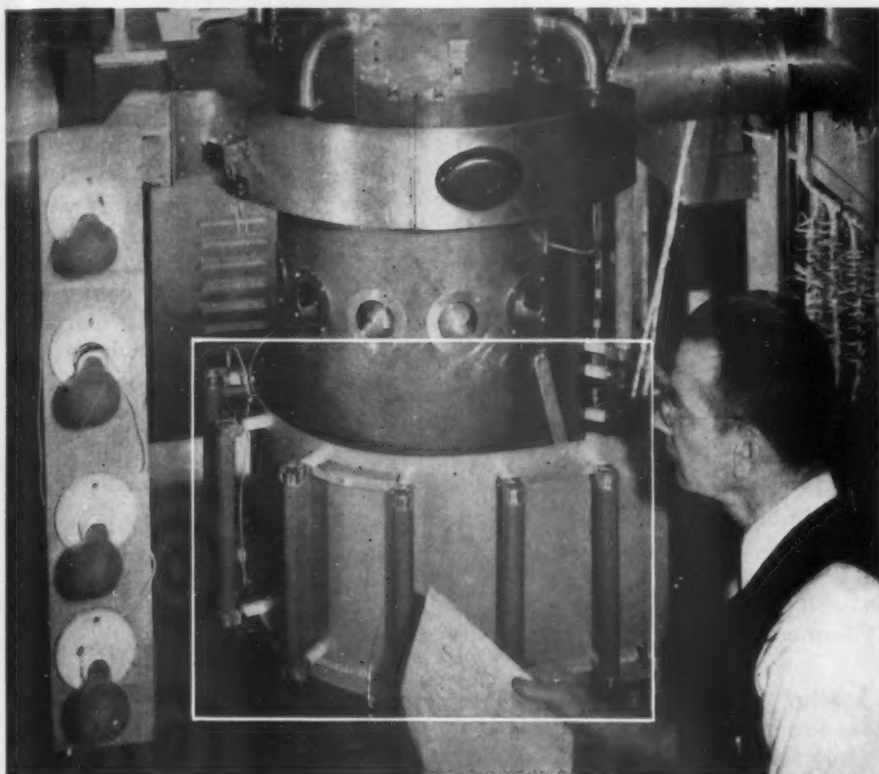
He had been a senior buyer of truck stampings for Ford since 1953. Joining the company as a student trainee in 1939, he returned to Ford in 1945 after serving with the U. S. Air Force. He was a supervisor in central staff purchasing and Ford Division purchasing, and was staff assistant in the office of the general manager of the Ford Division.

Charles F. Marchant, purchasing agent for R. E. Dietz Co., Syracuse, has retired after 47 years of service with the firm. He is succeeded by **G. L. Petrie**, former supervisor of the planning department. Mr. Marchant joined Dietz in 1909, and was named purchasing agent in 1929.

The Plumb Chemical Corp., Philadelphia, has named **James F. Adams** to the post of director of purchases. Mr. Adams formerly served in administrative and sales positions with **Fayette R. Plumb, Inc.**, the parent company.

★ Control Components Digest ★

News and notes on resistors, rheostats, relays, motor controls, dimmers and other control components



BIG MOON RADAR undergoing tests. Ward Leonard resistors—like those in foreground—help this gear stay on the air—or, rather, on space.

New moon radar to explore outer space

The U.S. Army Signal Corps hasn't got a transmitter in outer space—yet.

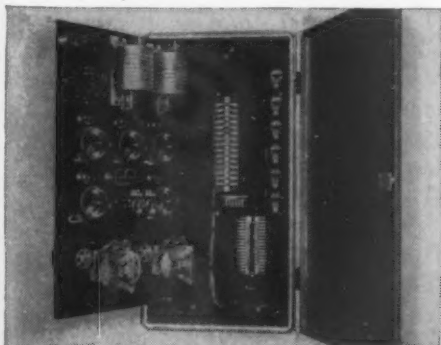
So, for their continuing studies of radio wave propagation in space and the upper atmosphere, they bounce radio waves from their new high-powered radar, Diana, off the moon and planets and study the return pulse.

Designed and built by Radio Engineering Laboratories of Long Island City, N. Y., the new radar transmitter puts out 50 kilowatts, continuous wave, and may be pulse modulated at various pulse widths and repetition

rates. Receiver gain is 170-db at better than 3-db noise figure.

Throughout the equipment, high-stability Ward Leonard resistors, like the big Vitrohm resistors shown above, do duty as high-voltage bleeders, surge and current limiting resistors, and protective meter shunts in high-voltage circuits.

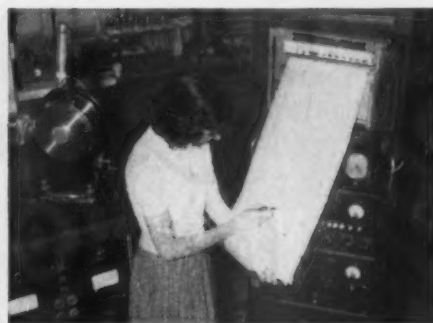
You'll find Ward Leonard Vitrohm resistors completely described in our 64-page Catalog No. 15, together with nomographs and charts to help select them. Write for your copy today.



Relays mastermind traffic lights

Sun, rain, sleet, snow, and continuous 24-hour-a-day duty is the lot of this master traffic light controller. Four dependable Ward Leonard relays select automatic timing cycles. Two more relays allow remote control of off-duty flashing amber signals and signal shut-down. Learn more about these rugged relays in Ward Leonard Bulletin No. 110.

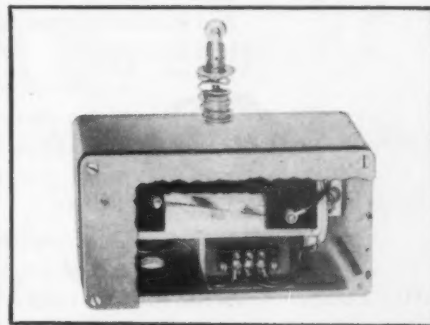
Photo courtesy Crouse-Hinds Co.



SHE'S CHECKING CHART RECORD from X-ray spectrometer in Ward Leonard's test lab.

Plant X-ray speeds quality control and helps catch crooks

X-ray diffractometer and spectrometer tests insure high quality and uniformity of both raw materials and fabricated components at Ward Leonard. These instruments check crystal structure in ceramics, magnetic amplifier cores, contact metal, and resistance wire. In off hours, they help the Mount Vernon Police and Fire Department put the finger on crooks and arsonists.



AUTOMATION FOR MACHINE TOOLS is simplified by this precision control potentiometer.

Control for machine tools

Accurate electronic control component for cutting tools, winders and processing machine drives is provided by this compact, precision potentiometer.

A half-inch plunger movement drives the metal alloy contact across the special resistance element. Enclosure is compact; calibration is permanent. Standard resistance—10,000 ohms; up to 25,000 ohms on special order. Write for Bulletin 68.

6-3

**WARD LEONARD
ELECTRIC COMPANY**
50 SOUTH ST., MOUNT VERNON, N. Y.



Result-Engineered Controls Since 1892

RESISTORS • RHEOSTATS • RELAYS • CONTROLS • DIMMERS

CALL ON
Campbell
 For the Right Sling Chain
 For Any Job!

Guaranteed for a Full Year

No matter what your requirements are for Sling Chains, you're sure to find what you need in Campbell's complete line—Cam-Alloy, High Test Steel, or Wrought Iron. And with each Sling Chain you'll enjoy the protection of Campbell's "Guarantee and Certificate of Test."

Every Campbell Sling (including attachments) is proof-tested at the factory to a load in excess of the working load limit and carefully inspected, link-by-link, before shipment.



An identification ring is attached to the master coupling of each Sling Chain with grade, type, reach and register number indicated.

Get complete information on the wide variety of Campbell Sling Chains. Write for your copy of the new Campbell Sling Chain Catalog. It contains specifications, working load limits, and helpful suggestions for use in ordering Campbell Sling Chains.



CAMPBELL CHAIN

Company

YORK, PA.

West Burlington, Iowa • Portland, Oregon • Sacramento, Calif.

Maker of the famous Lug-Reinforced Tire Chains



purchasing
 people

Witco Chemical Co., New York, has appointed **Earl T. Runcie** as director of purchases. He will be responsible for company-wide purchasing policies and the supervision of all plant purchasing personnel. Mr. Runcie comes to Witco from Continental Carbon Co., a Witco affiliate, where he was special assistant to the executive vice president and manager of oil and gas divisions.

Continental Screw Co., New Bedford, Mass., has announced the appointment of **Harry E. Gifford** as buyer. Mr. Gifford, a



Harry E. Gifford

graduate of Boston University — College of Business Administration was manager of operations for a major airline.

Walter G. Larsen has been named director of purchases for Consolidated Freightways, Portland, Ore. He had been purchasing agent for the motor freight firm since 1949. Harold Roetker, formerly assistant purchasing agent, is now purchasing agent for the Portland terminal. Mr. Larsen started with Consolidated in 1937 as a stock room clerk. Before being named purchasing agent, he had advanced through the positions of foreman and superintendent of the stock room.



one must set the example ... and with high speed steel it's REX

It's a real satisfaction when you set the example by what you make . . . when it becomes a *standard for comparison*. That's why Crucible is proud to have kept REX high speed steel tops in its class for so many years.

But don't take our word for REX's superiority. Try it on your own work. Compare its structure, finish, hardenability, carbide distribution and general uniformity. You'll see for yourself why it's the *standard* wherever high speed steels are used.

Remember, REX is made only by Crucible. So call for REX at your nearby Crucible warehouse, or for quick mill delivery — *Crucible Steel Company of America, Henry W. Oliver Building, Pittsburgh 22, Pa.*

CRUCIBLE

first name in special purpose steels

Crucible Steel Company of America

For More Information Circle No. 342 on Inquiry Card—Page 17

JANUARY, 1956

265



If your
products
will benefit
from superior
CUSHIONING
for safety,
for comfort...
investigate

VINYL foam
the NEW flexible foam
that makes
good products better

Already
in use for automobiles,
public transit, public buildings.

For information and suppliers write
ELASTOMER CHEMICAL CORP.
212 WRIGHT STREET, NEWARK 5, N. J.
Bigelow 8-3888

For More Information Circle No. 343
on Inquiry Card—Page 17

industry

A new furnace for heat treating steel slabs prior to rolling them into plates has resulted in better, more efficient and economical practices at the **Alan Wood Steel Co., Conshohocken, Pa.**

An expansion program calling for a 50% increase in tire output and an expenditure of nearly \$6,000,000 has been announced for the Los Angeles plant of **B. F. Goodrich Co., Akron, O.** Included in the expansion are two new buildings and curing equipment.

Eaton Mfg. Co., Cleveland, has revealed plans for a major equipment and tooling program at its Aircraft Division in Battle Creek, Mich., for the production of titanium compressor blading for jet engines.

Work on a \$3,500,000 addition to the facilities of the chemigum plant of **Goodyear Tire and Rubber Co., Akron,** is well under way. The plant, part of Goodyear's announced \$100,000,000 expansion program, will produce chemigum rubbers and latices used by the paper, paint, textile, and rubber industries. Completion of the project is scheduled for August.

Henry Disston & Sons, Inc., has been acquired by **H. K. Porter Co., Inc., Pittsburgh.** Also, the Monrovia, Calif., concern of **Carlson & Sullivan, Inc.,** manufacturers of steel rules and measures, has also been acquired. The latter will operate as a part of the new Henry Disston Division.

An increase of 75 tons per day in mill output of **National Container Corp., New York,** has been achieved at the firm's Tomahawk, Wis., mill through the installation of a new machine.

Best way to run any business is to cut Filing Costs.
Reports from all industries acclaim the cost-cutting features of **DELTA'S BISCA FILE.**



If your plant isn't using BISCA Files, you're paying too much for filing. Match your present file against these challenging facts.

BISCA's speed reduces labor costs. It removes an average 25% more metal per stroke, saving labor time. One railroad shop reports, "BISCA is far better than the bastard files

Only with Delta BISCA Files can you get the most filing at lowest costs.

they had been using." BISCA cuts brass, iron, steel, copper and aluminum alloys with equal efficiency—defies the hardest materials even tough plastics. It cuts like a double file, yet leaves a smooth finish. BISCA lasts long after other files have lost their file life, thus reducing your outlay.

DELTA FILES



DELTA FILE WORKS
INCORPORATED
PHILADELPHIA 37, PA.

For More Information Circle No. 344
on Inquiry Card—Page 17

PURCHASING



At Wendel Research & Mfg. Corp.

Shell Dromus Oil E increases tool life 60%, provides better cooling and increased production

Wendel Research & Mfg. Corp., Albertson, New York, encountered extremely short tool life when drilling A.I.S.I. 4140 steel used in the manufacture of pilot ejection seats. They also experienced broken bits, chip welding, discoloration and burning of the tools. Shell Dromus Oil E was recommended to combat these difficulties. Here are the results:

Dromus Oil E immediately ended Wendel's trouble. The drill and steel bar stock were very cool and easy to handle. Chip settling was excellent, and discoloration of tools and work was completely eliminated.

Here are some of the outstanding features of Dromus Oil E:

1. Excellent wetting and cooling properties—wets all metal surfaces extremely fast.
2. Provides longer tool life—better finish.
3. Not sticky or greasy—keeps tools and work exceptionally cool.
4. Forms a solution, not an emulsion . . . is stable in any concentration.
5. Easy to mix in hot or cold, hard or soft water.

Write for information on Shell Dromus Oil E. See how it can help you increase tool life.

SHELL OIL COMPANY

50 WEST 50TH STREET, NEW YORK 20, NEW YORK
100 BUSH STREET, SAN FRANCISCO 6, CALIFORNIA





LOWELL

Reversible Ratchet SOCKET WRENCH

Everything you need in a reliable socket wrench:

1. **Strength** from the great crushing action of special heat-treated steel pawls... high tensile alloy handle... cap is all steel, not cast.
2. **Safety** from its strength... also, socket is held securely by snap ring and can't slip.
3. **Speed** gained through ease of handling—there is no lost motion.

Send for catalog 60-A showing our full line.

LOWELL WRENCH CO.

WORCESTER 8, MASS.

For More Information Circle No. 347 on Inquiry Card—Page 17

Save on Your
**INDUSTRIAL
TRACK**

**FULLY
GUARANTEED**

**FOSTER
QUALITY
RELAYING
RAILS**

Lower installation and maintenance costs—handle more cars better. Foster nationwide warehouses also stock every New Rail Section 12# through 175#, Switch Material and Accessories to meet your specific job requirements.

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on Inquiry Card—Page 17



That's about all you have to do to contact one of Milford's 5 plants or 20 offices! And Milford means fast deliveries, top quality and service — always!

THE
MILFORD
RIVET & MACHINE CO.

Plants: Milford, Conn.; Norwalk, Calif.; Elyria, Ohio; Aurora, Ill.; Hatboro, Pa.

Offices: Atlanta, Chicago, Cleveland, Detroit, Fort Worth, Indianapolis, Newark, New York, Pittsburgh, Racine, St. Louis, St. Paul, San Francisco, Seattle; Norwalk, Calif.; Stratford, Conn.; Charlotte, N. C.; Seneca Falls, N.Y.; Jenkintown, Pa.; Westwood, Mass.

Headquarters for RIVETS

Tubular split and special cold-formed
and Rivet-setting Machines

For More Information Circle No. 349
on Inquiry Card—Page 17

industry

The Eberhard Faber Co., after 83 years in Greenpoint, Brooklyn, is moving to Wilkes-Barre, Pa. A new plant, covering 250,000 sq.ft. on a 25 acre site, is being built and will be ready for occupancy by late 1956.

Joseph T. Ryerson & Son, Inc., Chicago, has purchased an 11½ acre tract of land in Pinoka, N. C., for a new steel service plant.

Foiltainer, Inc., San Gabriel, Cal., has concluded an agreement with Reynolds Metals Co., Louisville, Ky., to operate West Coast facilities for Reynolds. Reynolds will handle the marketing of the aluminum foil containers through its nationwide sales organization.

HANDY VALUE-ANALYSIS TOOL

... Industrial buyers' guide can be kept right on desk

Desk-type industrial buyers' guide is surprisingly complete despite compactness — 10 lbs. — 1400 pages. Reason: con-



centrates on industrial needs, plus ingenious indexing system. Can be picked up with one hand. No need to get up from desk. Cuts source-finding time 50%.

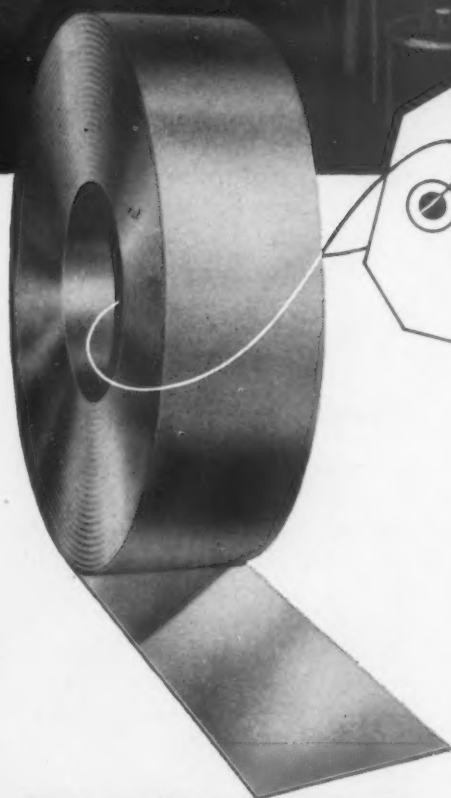
**CONOVER-MAST
PURCHASING DIRECTORY**

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For More Information Circle No. 350
on Inquiry Card—Page 17→
PURCHASING

Anyone will tell you...

**Follansbee's finish
is finest!**



Rigid quality control through every phase of production at Follansbee produces a finish that has earned the reputation of the finest in the industry. Follansbee mill operators take pride not only in meeting your exact specifications but also in giving you cold rolled strip that has consistent uniformity.

Get in touch with your Follansbee representative before you place your next order for strip. He's anxious to show you what true quality and unmatched service can do for you and your product.

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Cold Rolled Strip • Terne Roll Roofing • Polished Blue Sheets and Coils

Sales Offices in Principal Cities



"SAFELY DOES IT" AT DESOTO PLANT

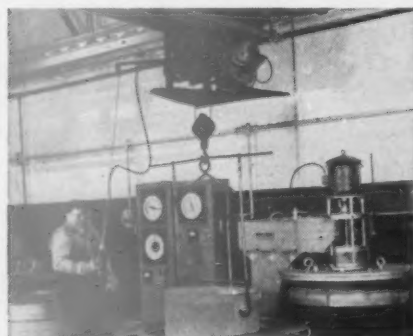
In the automotive industry, as in manufacturing plants across the nation, the emphasis is always on safety. In the mammoth DeSoto Plant, a car body, above, moves smoothly and efficiently along the assembly line secured *safely* to the body-drop hoist

with 28 Crosby Clips. Everywhere, workmen recognize and know they can depend on the clip with the Red-U-Bolt—genuine *safe* Crosby Clips. Today, Crosby Clips safeguard more men and equipment than any other drop-forged wire rope fasteners.



EXCLUSIVE TURNBUCKLE EYE INCREASES USEFULNESS

A pear-shaped turnbuckle eye designed to take the ear of a shackle one size smaller, as well as the standard shackle, is another exclusive product developed for efficiency in industry by the Thomas Laughlin Division of American Hoist & Derrick Co. Industrial users report that Laughlin's exclusive double-duty eye not only rates the approval of workmen, but also helps cut their turnbuckle inventory.



MEN, EQUIPMENT PROTECTED

A positive means of avoiding accidents due to overloaded blocks is provided industry by Load-Rated Crosby

Blocks. Workmen know that the Crosby Block they're using is right for the job, and that valuable equipment is protected because the safe working capacity is *embossed right on the side-plates*. Load-Rated Crosby Blocks and genuine Crosby Clips are products of the Crosby Division, American Hoist & Derrick Co., St. Paul 1, Minnesota.



CUTS HOIST ACCIDENTS

To help eliminate the major cause of hoist accidents—loads slipping or jarring off the hook—safety-conscious industrial users in plant after plant are switching to Laughlin Safety Hooks. A powerful snap-spring latch on drop-forged Laughlin Safety Hooks guarantees that loads cannot be jarred from the hook and prevents overloading with too many lines. Laughlin Safety Hooks are part of the famous Laughlin line—the world's most complete line of fittings for wire rope and chain. For complete catalog, write: Thomas Laughlin Division, American Hoist & Derrick Co., St. Paul 1, Minnesota, or Portland, Maine.

industry

The Eagle Lock Co., Terryville, Conn., has changed its name to The Eagle Lock & Screw Co.

A facilities program of over \$1,000,000 to implement production of a new all-glass color TV picture tube has been announced by Westinghouse Electric Corp., Pittsburgh, for its Elmira, N. Y., plant.

Container Corp., of America, Chicago, is building a new pulp and paper mill at Brewton, Ala. Costing \$27,000,000, the initial annual capacity of the mill will be 100,000 tons of bleached sulphate paper and board. Ebasco Services Inc. is supervising construction.

The Bunting Brass & Bronze Co., Toledo, has purchased The Detroit Sintered Metals Corp.

The Carborundum Co., Niagara Falls, N.Y., is spending \$1,500,000 to modernize and expand its "Monofrax" refractories plant in Falconer, N.Y. The program stretches over a five year period, with completion of a new building for storage and handling of raw materials by 1956.

The construction of an addition to the Elgin, Ill., plant of the Shakeproof Division, Illinois Tool Works, Chicago, has been announced. Plans call for occupancy of the new building by April.

A new Paper Specialty Department is now in operation at the Wilmington, Calif., plant of Bemis Bro. Bag Co., St. Louis, Mo.

American Smelting and Refining Co., Barber, N.J., has announced that its continuous casting unit for 5" to 9" diameter bearing bronze is now in operation.



Many things go to make up good customer service. One of these in the Rome organization is adequate stock for fast handling and shipment.

How Rome is geared up to help you in a hurry

Need a certain wire or cable in a hurry? In a week? Yesterday? Well, even our 90,000 square feet of new warehouse space won't get it to you yesterday. But it *does* mean that we have a wide range stock of standard constructions, in quantity, ready and waiting to fill your needs.

Further, ten strategically located stock distribution

centers throughout the country make possible well-rounded local stocks. Fast factory deliveries. Fast local deliveries. The best in service to back up your electrical distributor.

Rome has a reputation among its customers for making realistic delivery promises *and keeping them.*

May we serve you?

It Costs Less to Buy the Best



ROME CABLE

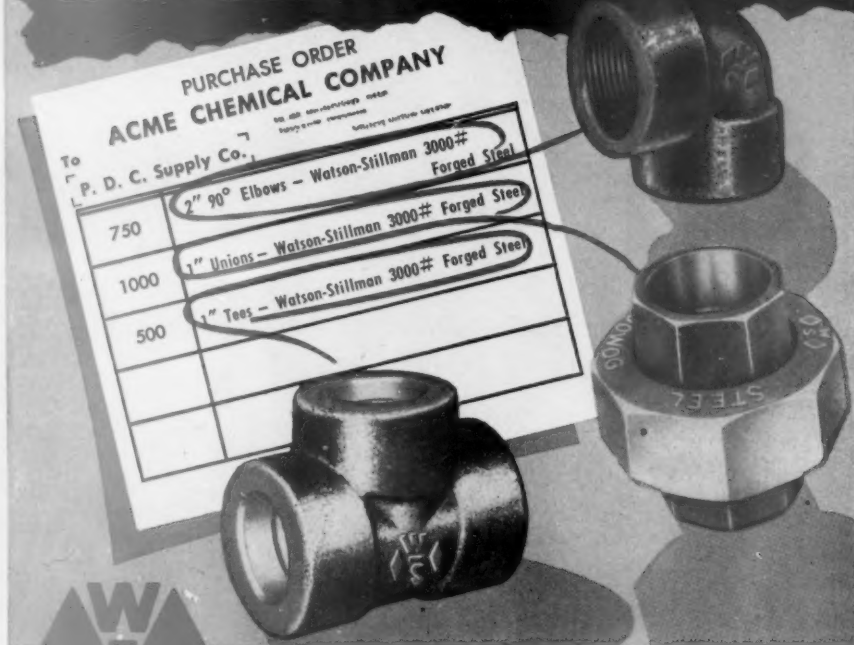
Corporation

ROME • NEW YORK

and
TORRANCE • CALIFORNIA

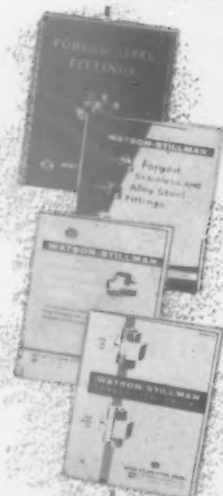
For More Information Circle No. 352 on Inquiry Card—Page 17

when you purchase W-S FORGED STEEL FITTINGS



YOU GET THESE ADVANTAGES

- Speedy Delivery from Distributor Stocks
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- Quality Fittings Backed by Over 100 Years Experience



Our Purchasing Agent's
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Contains Complete Catalog
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Forged Steel Fittings are the *major* products manufactured at Watson-Stillman Fittings Division. No other lines to tie up production machines—to take preference over your forged steel fittings order. Our modern machines run continuously to turn out thousands of fittings every day. We keep adequate stocks of all types and sizes at our distributor warehouses throughout the country. Small lots—large orders—it makes no difference—they're handled quickly and efficiently.

There's a Watson-Stillman Distributor near you. Get to know him. He can help you with your forged steel fittings purchases.

Send today for our Purchasing Agent Literature Package.



WATSON-STILLMAN FITTINGS DIVISION

HKP H. K. PORTER COMPANY, INC.
Roselle, N. J.

For More Information Circle No. 353 on Inquiry Card—Page 17

industry

Purchase of the assets and business of the **Southwest Fabricating & Welding Co., Inc.**, Houston, has been announced by the **Walworth Co.**, New York. Southwest will be operated as a subsidiary of Walworth.



To provide improved warehousing service to the metal working industry, **Uddeholm Co. of America, Inc.**, New York, has completed a warehouse expansion program in New York and Cleveland. These facilities will stock larger inventories of Swedish quality tool steels, specialty strips steels and boiler tubes.

Allegheny Ludlum Steel Corp., Pittsburgh, has opened a new melting department for the production of high alloy steels that offers 250,000 lbs. per month of high performance alloys to industry.

Pittsburgh Plate Glass Co. has established a new wholly-owned subsidiary to be known as the **Pittsburgh Plate Glass Export Corp.** It will handle all export business in the western hemisphere.

Standard Pressed Steel Co., Jenkintown, Pa., and **Cleveland Cap Screw Co.** have combined to form one of the largest organizations in the fastener industry.

Pittsburgh Corning Corp., Pittsburgh, is expanding production of **Foamglas** cellular glass insulation by 50% at its Port Allegheny, Pa., plant. Additional melting and processing equipment, at an estimated cost of \$1,250,000, is being installed in existing buildings.



*His slow-moving shipments drove Smedley to bed
With chills and hot fever and pains in his head.*



*Now Smedley's the picture of vigor and vim—
Swift **RAILWAY EXPRESS** makes deliveries for him!*

The big difference is

Whether you're sending or receiving,
whether your shipment is big or small, whether
it's moving by rail or air, it pays to specify
Railway Express. You'll find it makes
the big difference in over-all economy, speed,
and safe, sure delivery. It's the complete
shipping service—free enterprise at its best.

New Low Import-Export Rates!

Railway Express now offers inland shippers and receivers
rate reductions on import-export shipments . . . through
waybilling from point of origin to destination. Ask your
Railway Express agent about this new international service.



...safe, swift, sure

Norgren — a complete line of PRESSURE REGULATORS

to Improve Performance, Reduce Wear of Air-Operated Equipment

MORE THAN 1,100,000 NORGREN REGULATORS PUT TO USE BY INDUSTRY

NEARLY 400 STANDARD MODELS

plus many others designed to meet specific performance requirements.



AIR REGULATORS

Reduce line pressures up to 400 psi to maximum delivery pressures of 50, 75, 125 or 250 psi. $\frac{1}{8}$ " to 1" incl. Series 2A.



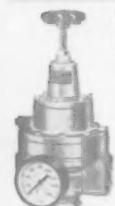
RELIEVING-TYPE AIR REGULATORS

Reduce line pressures up to 400 psi to maximum delivery pressures of 50, 75, 125 or 250 psi. Relieving feature protects against unusually high pressures. $\frac{1}{8}$ " to 1". Series 2AX.



PRECISION AIR REGULATORS, RELIEVING TYPE

Reduce line pressures up to 400 psi to working pressure. Air flow up to 2 cfm with 30 psi maximum delivery pressure. Also flows less than 1 cfm with 60 or 120 psi. $\frac{1}{4}$ ". Series 11,400.



PILOT-CONTROLLED AIR REGULATORS, INTEGRAL TYPE

Extreme precision over wide range. Reduce line pressures up to 400 psi to working pressure from 2 to 120 psi. 30, 60, or 120 psi maximum delivery. $\frac{1}{2}$ ", $\frac{3}{4}$ ", 1". Series 20AC.



PILOT-CONTROLLED REGULATORS, REMOTE CONTROL TYPE

Reduce line pressures up to 400 psi to working pressure from 2 to 120 psi. 30, 60 or 120 psi maximum delivery pressure. $\frac{1}{2}$ ", $\frac{1}{2}$ " $\frac{3}{4}$ ", 1". Series 20AA.



LOW CAPACITY REGULATORS FOR AIR OR LIQUIDS

Reduce line pressures up to 400 psi to maximum delivery pressures of 50 or 175 psi. 2 inlet ports, 3 outlet ports. $\frac{1}{4}$ ". Series 3A2-B.



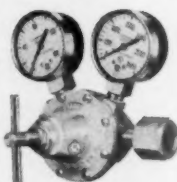
LOW PRESSURE AIR REGULATORS

Reduce line pressures up to 250 psi to maximum delivery pressures of 40 or 60 psi. $\frac{1}{4}$ ". Series 1505.



LIQUID PRESSURE REGULATORS

For water, oil, non-corrosive liquids up to 200° F. Reduce line pressures up to 400 psi to maximum delivery pressures of 50, 75, 125 or 250 psi. $\frac{1}{8}$ " to 1" incl. Series 2H.



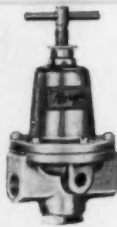
CYLINDER GAS PRESSURE REGULATORS

Reduce cylinder gas pressures up to 3000 psi to maximum delivery pressures of 50, 75, 175 or 450 psi. 2 inlet ports, 3 outlet ports. $\frac{1}{4}$ ". Series 4C and 6C.



BUTANE PRESSURE REGULATORS

For primary stage pressure regulation. Reduce line pressures up to 250 psi to desired working pressure up to 50 psi. $\frac{1}{2}$ ", $\frac{3}{4}$ ", 1". Series 2E.



STEAM PRESSURE REGULATORS

For saturated steam and hot water up to 450° F. Reduce line pressures up to 400 psi to maximum delivery pressures of 50, 75, 125 or 250 psi. $\frac{1}{2}$ ", $\frac{3}{4}$ ", 1". Series 2B.



REGULATOR-FILTER UNIT

Automatically filters air and regulates air pressure. Replaceable, transparent or metal filter bowl. Choice of 3 filter elements. $\frac{1}{4}$ ", $\frac{3}{8}$ ". Series 5A and 5N.

Phone Norgren representative listed in telephone directory classified section under "Norgren Pneumatic Products" or



WRITE FOR CATALOG

on Norgren Pressure Regulators, Oil Fog Lubricators, Air Filters, Valves and Hose Assemblies.

For More Information Circle No. 355 on Inquiry Card—Page 17

industry

Bristol Brass Corp., Bristol, Conn., has opened a new one-story plant for its subsidiary, Accurate Brass Corp., in Bristol.

Alan Wood Steel Co., Conshohocken, Pa. has ordered a new four-high temper mill for its cold rolled department. Also, a pin-wheel type coiler has been ordered for the hot strip mill. The two installations, which will cost more than \$2,000,000, are part of the second phase of the expansion program at the Ivy Rock, Pa., plant.

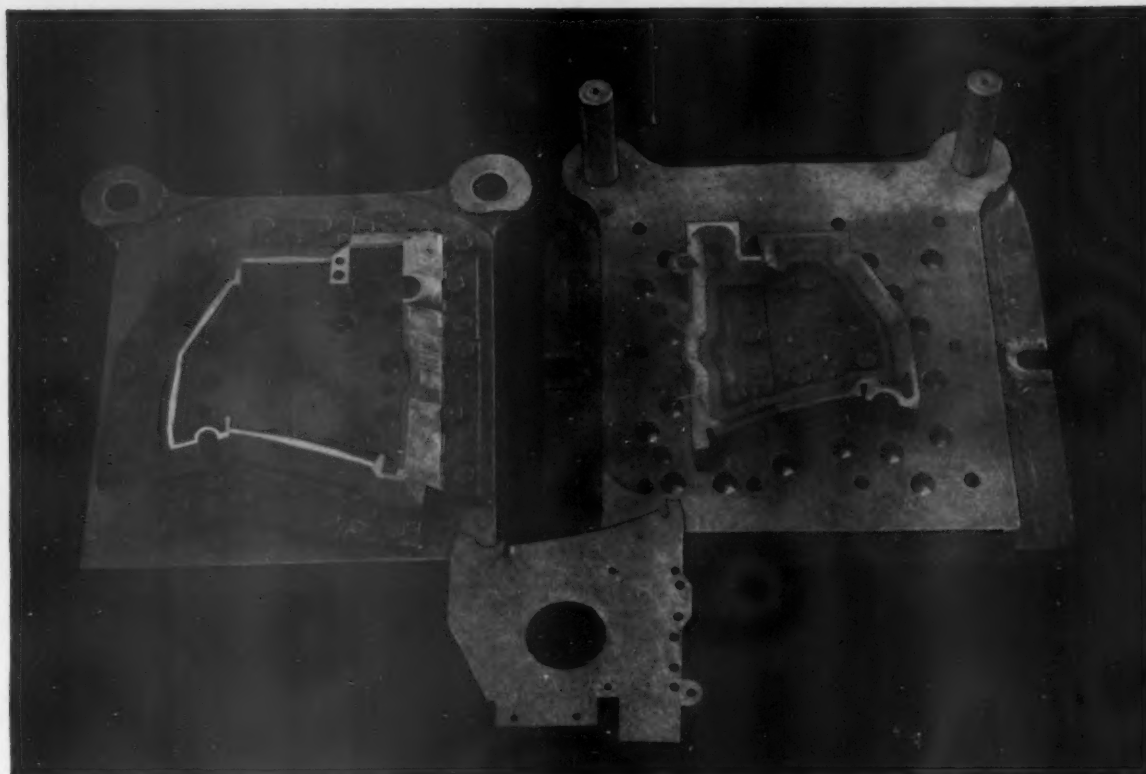
Remis Bro. Bag Co., St. Louis, has announced that the Flexible Package Co., Chicago; a wholly owned subsidiary, is moving to Terre Haute, Ind. Flexible will occupy a new building built near Terre Haute.

Inland Steel Co., Chicago, is using a new, semi-automatic mill for rolling wide flange beams, on a limited basis. Current production is limited to trial runs of beams in 8, 10, and 12-inch sections. It is designed to produce sizes ranging from 8 to 24 inches.

Ex-Cell-O Corp., Detroit, has purchased a modern 66,000 sq. ft. plant in Elwood, Ind.

An electronic tube warehouse and commercial service office has been opened in Seattle, Wash., by the Tube Department, General Electric Co., Schenectady. It will carry an inventory of receiving, power and cathode ray tubes.

In a major expansion program, Metal Goods Corp., St. Louis, Mo., has opened new plants in St. Louis, Wichita, and Memphis. The new St. Louis plant has twice the capacity of the previous one. The other two are for servicing increased needs in their respective areas.



How to *Cut Costs and "Corners"* on Your Blanking Dies

**SEND FOR THIS
NEW CATALOG
"FORGING AND
CASTING PRODUCTS"**

It's hot off the press with full details on FCC Air Hardening, Oil Hardening and other Cast-to-Shape Tool Steel Specialties that can save you time and money . . . also Composite Die Sections, and Smooth-Hammered Forgings in a wide range of tool and stainless steels. *Don't wait—get your copy NOW.*

**Write Today
ADDRESS DEPT. P-73**

You can save steel and time in the making of dies for blanking, trimming, beading, or any application involving the cutting of sheet metals to regular or irregular shapes, by assembling them from FCC Composite Steel Die Sections.

These prefabricated die parts consist of fine tool steel cutting edges, in a selection of grades, electrically welded by a special process to non-hardenable mild steel bases. Thus, screw and dowel holes may be easily drilled after heat

treating, and there are numerous other advantages that will be immediately obvious to the die maker.

Thousands of die shapes may be made up from combinations of thirty-five standard sections. Specially shaped sections are manufactured to customers' specifications in five to ten days.

Make *your* dies this money-saving way. • Write *Allegheny Ludlum Steel Corporation, Forging & Casting Division, Wanda & Jarvis Aves., Detroit 20, Mich.*

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In plastics too . . . the easiest answer is to surround your problem with "know how" and then shape it to fit. If your parts can be molded in one of the tried and true thermo-setting plastics or the newer fluoro-carbons and glass-reinforced materials, flexible Kurz-Kasch can bend "know how" like a pretzel and come up with dependable custom-molding. Name the service you need . . . designing, moldmaking, production runs . . . it's all under one roof . . . at Kurz-Kasch. And talk about pretzels . . . here, they bend over backwards to help straighten you out. Let's talk it over, O. K?

SPECIALISTS IN THERMO-SETTING PLASTICS FOR 40 YEARS.

kurz-kasch

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For More Information Circle No. 357 on Inquiry Card—Page 17

suppliers

George A. Cypher has been appointed specialist - insulating materials for the **Chemical Materials Department, General Electric Co., Schenectady.**

W. W. Champion has been appointed district manager of the Shreveport, La., sales office of **Air Reduction Sales Co., New York.**



D. B. Roberts

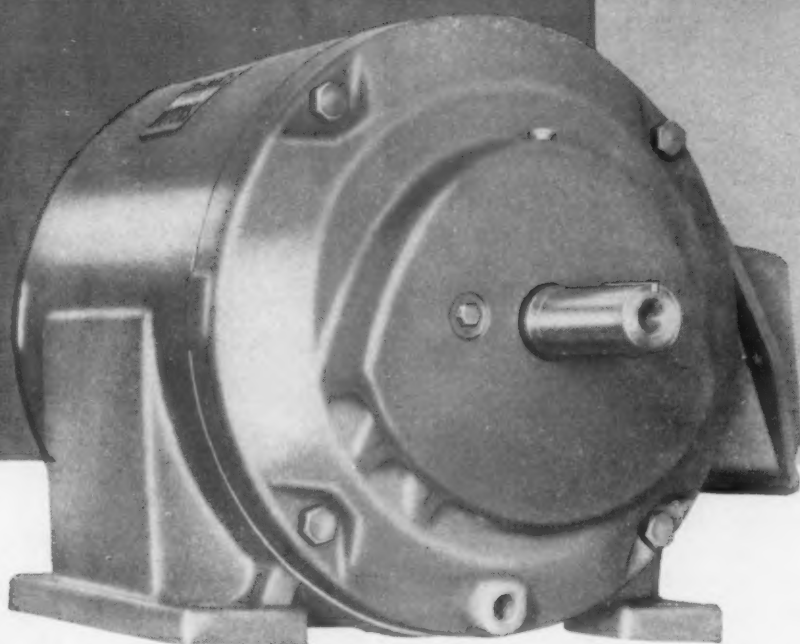
The appointment of Donald B. Roberts as Missouri Valley Division manager has been announced by **Permacel Tape Corp., New Brunswick, N. J.** He will headquarter in St. Louis and cover Arkansas, Missouri, and parts of Illinois, Iowa, Kansas, Kentucky, Mississippi, Nebraska, South Dakota and Tennessee.

Charles A. Dickinson has been made a special representative, national accounts—lighting, for **Sylvania Electric Products, Inc., San Francisco.** His territory will include California, Oregon, Washington, Nevada, Idaho, Montana, Utah, and Arizona.

William S. Johnstone has been named sales representative for the South Carolina and east Georgia area by **Graton & Knight Co., Worcester, Mass.**

Totally

Protected



**FROM
CORE
TO
COVER**

RELIANCE
Totally-Protected
MOTORS

The total protection concept of design and construction armors Reliance A-c. Motors against everyday hazards, with little or no maintenance. Total protection is made up of extra features like:

- Slot cell insulation of Double Backed Mylar
- Dynamically balanced rotor for vibrationless operation
- Entire insulation system impervious to acids, moisture and oils
- Metering plate regulates grease flow to bearing
- Ventilation louvres positioned high and dry in end brackets

There are 100 of these extra core to cover protection features in Reliance Motors. Each point is covered in our bulletin, "Check the 100 Facts". Why don't you write for one and get all the details?

B-1610

RELIANCE **ELECTRIC AND**
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Canadian Division: Welland, Ontario

For More Information Circle No. 358 on Inquiry Card—Page 17

YIPE!



HOW DOES GARRETT GIVE SUCH SERVICE?

What others may call impossible Garrett comes through as routine service. It seems as though they treat each order as the only one in their three plants. Everybody pitches in for service with the customer in mind.

If it is a stock item such as lock washers, flat washers, spring washers or hose clamps the order is usually on the way the same day. If it is stampings or assemblies Garrett engineers, production men and die makers team up to make their high-speed automatic equipment really hum . . . and your order is in your hands in half the time.

Want to be surprised by real service you can't beat? Next time send your order to Garrett for . . .

**LOCK WASHERS
FLAT WASHERS
HOSE CLAMPS
SPRING WASHERS
STAMPINGS**

Manufactured by

GEORGE K. GARRETT CO., Inc.
Philadelphia 34, Pa.



For More Information Circle No. 359
on Inquiry Card—Page 17

suppliers

The Yale & Towne Mfg. Co., Philadelphia, has appointed Charles T. Schwarz as Chicago branch sales manager. He replaces Roy L. Wolter, who recently became general manager of the Automatic Transportation Company division.



W. E. Froehlich



G. T. Zahnke

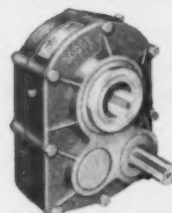
Walter E. Froehlich has been elected a vice president of Associated Spring Corp., Bristol, Conn., and placed in charge of all sales, research, and development activities of the corporation. At the same time, it was announced that G. Theodore Zahnke has been named general manager of the corporation's three Bristol divisions, succeeding Mr. Froehlich.

An organizational realignment and new assignments in the Synthetics Department sales division have been announced by Hercules Powder Co., Wilmington. John F. Copeland is now field sales manager, and George E. Osborn is now sales manager, Wilmington district. John S. Autenrieth has been named industry sales manager, covering the adhesives, printing ink, petroleum and plastics industries. Another industry sales manager, J. G. Little, will handle the paint, varnish, lacquer and other industries. Two district sales managers were also named; Henry D. Heiser for Houston, and B. J. Dougherty for St. Louis. And finally, Cliff S. Skow was made resident technical representative for the Los Angeles district.

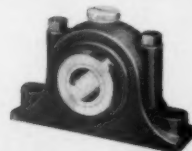
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Dodge Bulletins you should have—

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Write for your copies.

DODGE
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DODGE MANUFACTURING CORPORATION
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For More Information Circle No. 360
on Inquiry Card—Page 17

PURCHASING

Whatever
the job...

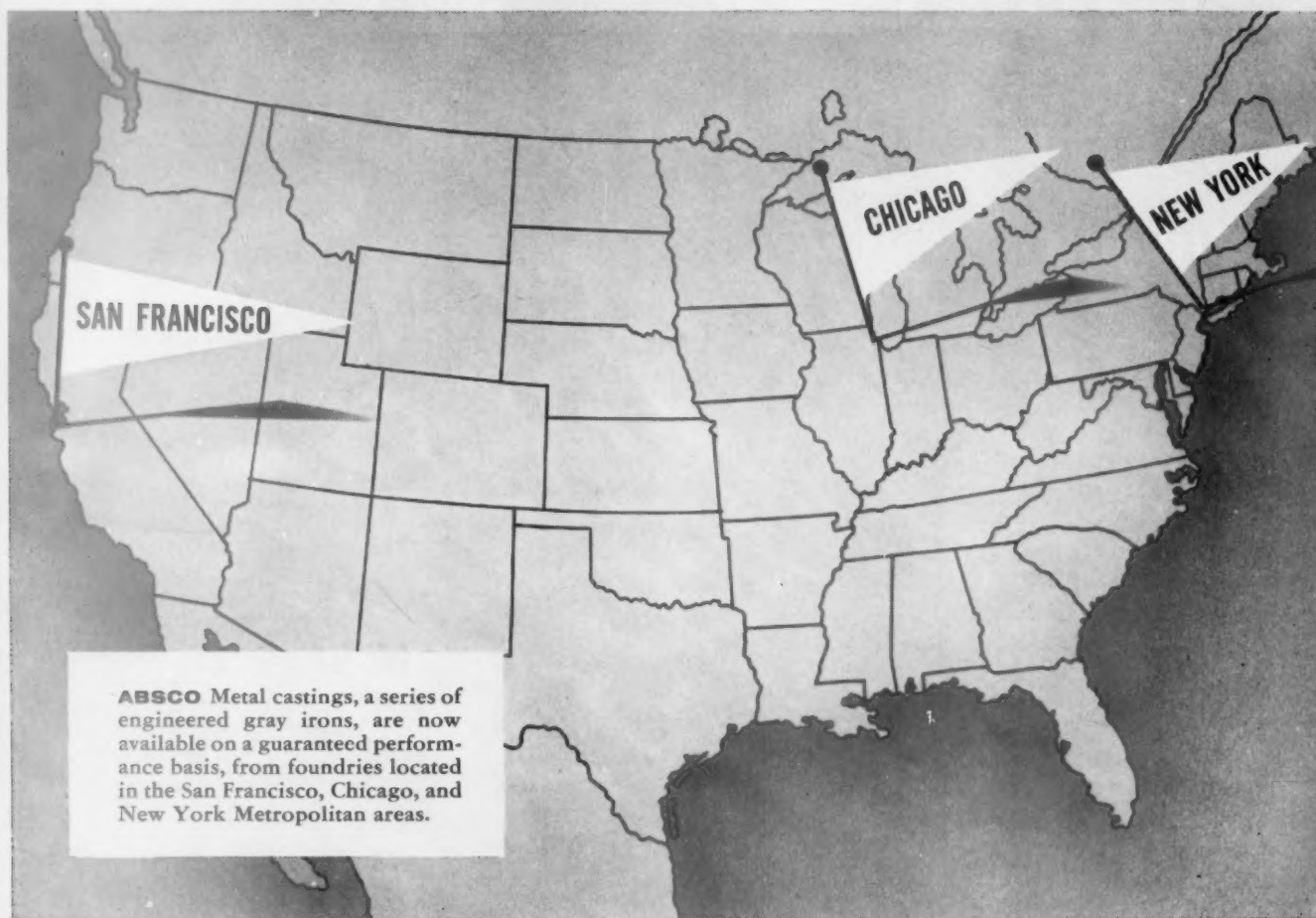


SURE-STICK, NON-SLIP Permacel Masking Tape makes this man's job easier on the windshield of "El Capitan," Santa Fe's new all-coach streamliner. He knows Permacel will come off clean . . . leave an even edge.

SELF-STICKING
PERMACEL TAPE

From Permacel Research . . . the right tape for any job. Write Permacel Tape Corporation, New Brunswick, N.J.

a *Johnson-Johnson* company



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Whatever your needs for engineered gray iron castings, ABSCO Metal provides the dependable, economical material. Dependable because of its structural uniformity . . . economical because of its ready machinability, greater strength, and capacity for absorbing vibration and shock.

For still further economy, ABSCO Metal is now available from our found-

ries located on both coasts and in the midwest. These modern, specialized facilities assure you fast, dependable deliveries of quality castings.

If you would like to know how the right ABSCO Metal can help you cut costs, increase production, or add value to your product . . . consult your American Brake Shoe representative.



VALUABLE DATA—this technical bulletin will help your engineers and product design specialists put ABSCO Metal to the best use. Write for your copy today.

BRAKE SHOE & CASTINGS DIVISION

AMERICAN

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COMPANY

**230 PARK AVENUE
 NEW YORK 17, NEW YORK**

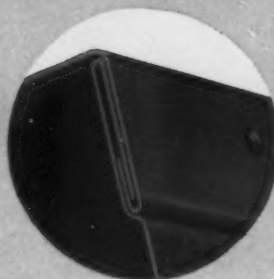
For More Information Circle No. 362 on Inquiry Card—Page 17

PURCHASING



LOCKERS and CABINETS

with
JET-LOCK



Construction

Forest
Green
Mist
Green
Desert
Sage
Office
Gray



offers these advantages:

- FAST ASSEMBLY
- ADDED STRENGTH
- EXTRA RIGIDITY and
- THEY'RE ECONOMICALLY PRICED

JET-LOCK construction means fast assembly since major parts *slide* together—fewer bolts are required for complete assembly. Added strength is assured because side, door frame and components of the Locker and Cabinet are interlocked throughout the entire length of each member by means of tight U-turn linkage at the joints.

Steel-Pride equipment has rigidity too because all mating parts make tight, positive contact along their entire length. And last but by no means least, the price is right. So you see, *feature for feature*, "Steel-Pride" Lockers and Cabinets really do offer more advantages at *no extra cost* to you.



Forest Green
Pearl Gray

SHOP EQUIPMENT TOO!



Green and Gray



If it's Shop Equipment you need—like Foremen's Desks, Service Carts, Drawer Cases, Nesting and Stacking Pans, Shelf Boxes, Tool Stands, Tool Boxes—we make them too. If not available in standard sizes, *we will manufacture it to meet your exact specifications.*



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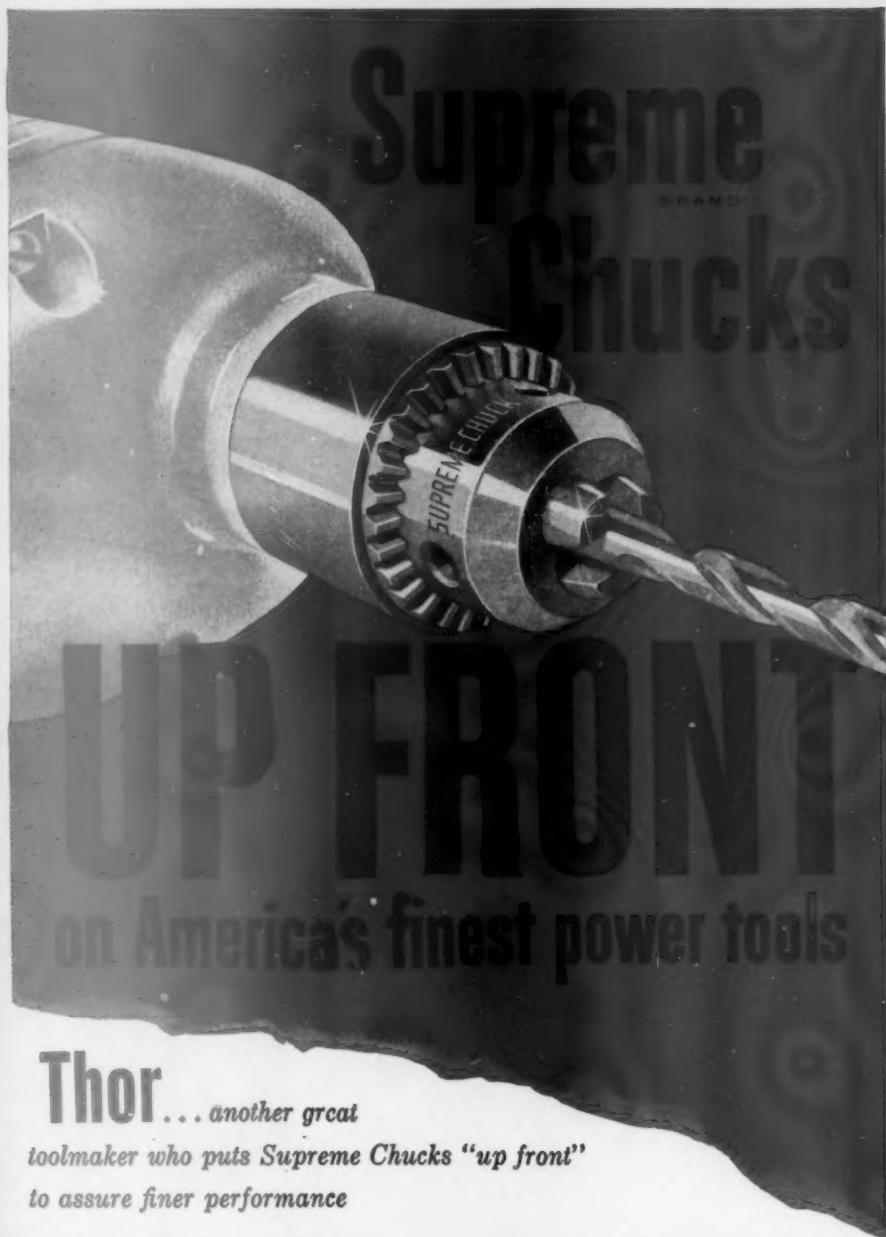
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Thor

... another great

toolmaker who puts Supreme Chucks "up front"
to assure finer performance

Thor Portable Power Tools are produced with the sincere intention of giving America's tool buyers the finest performance qualities possible. With this in mind, the management has elected to equip more and more of their output with Supreme Brand Chucks.

Thor, like other power tool makers, have found that they have a finer

product to sell when there's a Supreme Chuck up front. Tool buyers everywhere will do well to follow the leaders and specify Supreme on new tools—insist on them for all replacement use.

An industrial distributor near you can give you the full story on extra quality Supreme Brand Chucks.



SUPREME PRODUCTS, INC. • 2222 S. CALUMET AVE., CHICAGO 16, ILL.

For More Information Circle No. 364 on Inquiry Card—Page 17

suppliers

The Celotex Corp., Chicago, has made Donald W. Miller manager of gypsum sales.

American Potash & Chemical Corp., Los Angeles, has named Frank McGrane to its general sales department. He will operate out of the main office on special assignments.



S. H. Greenwood



F. Hillsley

F. J. Stokes Machine Co., Philadelphia, has appointed Samuel H. Greenwood as field sales manager. Fred Hillsley has been named district manager of the Philadelphia area, succeeding Mr. Greenwood.

Humbert R. Guzman has joined the sales staff of the Los Angeles Folding Carton Division, Robert Gair Co., Inc., New York.



J. W. Kelly

J. William Kelly has been made sales manager of the Electric Truck Section of the Industrial Truck Division, Clark Equipment Co., Battle Creek, Mich.

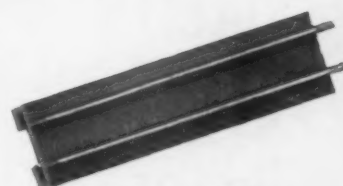
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MOLDED



DIE-CUT



EXTRUDED

ACADIA *Has 'em All Three Ways*

Every customer has a right to his synthetic rubber parts the way he wants them.

The more complicated the requirements, the easier for our engineers at Acadia to go to work. Our long experience guides us in giving you exactly the characteristics you desire. We process synthetic components, for oil-resistance, good aging properties, strength, compression-deflection, or any combination you specify.

And if you require resistance to heat or cold, remember Acadia SILICONE rubber

stays resilient at 100° below zero or 500° above. Silicone is molded or extruded for gaskets, seals, "O" rings, washers, sheets, cut-parts and packings.

There is an Acadia Sales Engineer serving your area. A letter will put him in touch with you immediately.

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MANUFACTURERS AND CUTTERS OF WOOL FELT



At
UNITCAST..

Top
QUALITY
CONTROL
calls for RECORDED EXACTNESS

Myriads of details go hand in hand with Quality Control. For one example, at the onset of production, a casting is "destroyed" by sectionalizing to determine dimensional accuracy. Irregularities can be corrected, molding methods acknowledged, and the general structure can be proved before subsequent costs are expended.

As illustrated above, the transparent "sectional template" visually approves interior members and voids, as well as outlines finish surface adequacy for the record.

Complete progress is recorded, and any time after inception—costs, revisions, equipment function, production details . . . and even difficulties encountered can be itemized with exactness.

It all adds up to *top quality control* service. This service can be *your* service. Write or call for complete information.

UNITCAST CORPORATION, Toledo 9, Ohio
In Canada: CANADIAN-UNITCAST STEEL, LTD., Sherbrooke, Quebec.

Unitcast



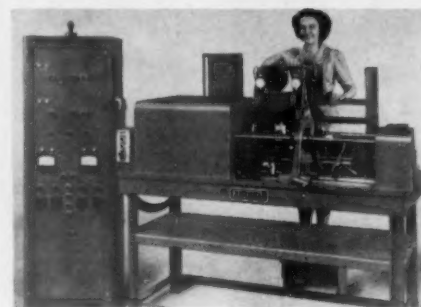
QUALITY
STEEL
CASTINGS

For More Information Circle No. 366 on Inquiry Card—Page 17

news

Automatic Sorting Gage Cuts Labor Costs

A fully automatic sorting gage, that is conveyor-fed, measures six conditions on automobile push-rods. The gaging units and reluctance hardness testers check the push-rods for OD and hardness at both ends, overall length and straight-



ness. The parts are sorted into three categories: good, salvage and scrap. 2500 pieces are handled automatically per hour. The good parts are fed to a conveyor to continue on to the next process while the scrap and salvage parts are sorted into separate bins out of the production line. To provide maximum control over the various processes, percentage counters have been provided at each gaging station. If rejects are excessive, the offending process machine is automatically shut off. The maker is Federal Products Corp., 1144 Eddy St., Providence 1, R. I.

Vacuum Remelting Produces Better Superalloys

The Allegheny Ludlum Steel Corp., Pittsburgh 22, Pa., is extending its facilities to produce 250,000 lbs per month of high performance alloys by the consumable electrode vacuum remelting process. This new process is now chiefly applied to the production of iron and nickel base superalloys, high speed steels and certain stainless steels but is expected soon to be applied to many other metals and alloys, now conventionally melted.

(Please turn to page 288)

PURCHASING

New multi-ribbed neoprene belt gives high drive capacity . . . resists heat, oil, abrasion

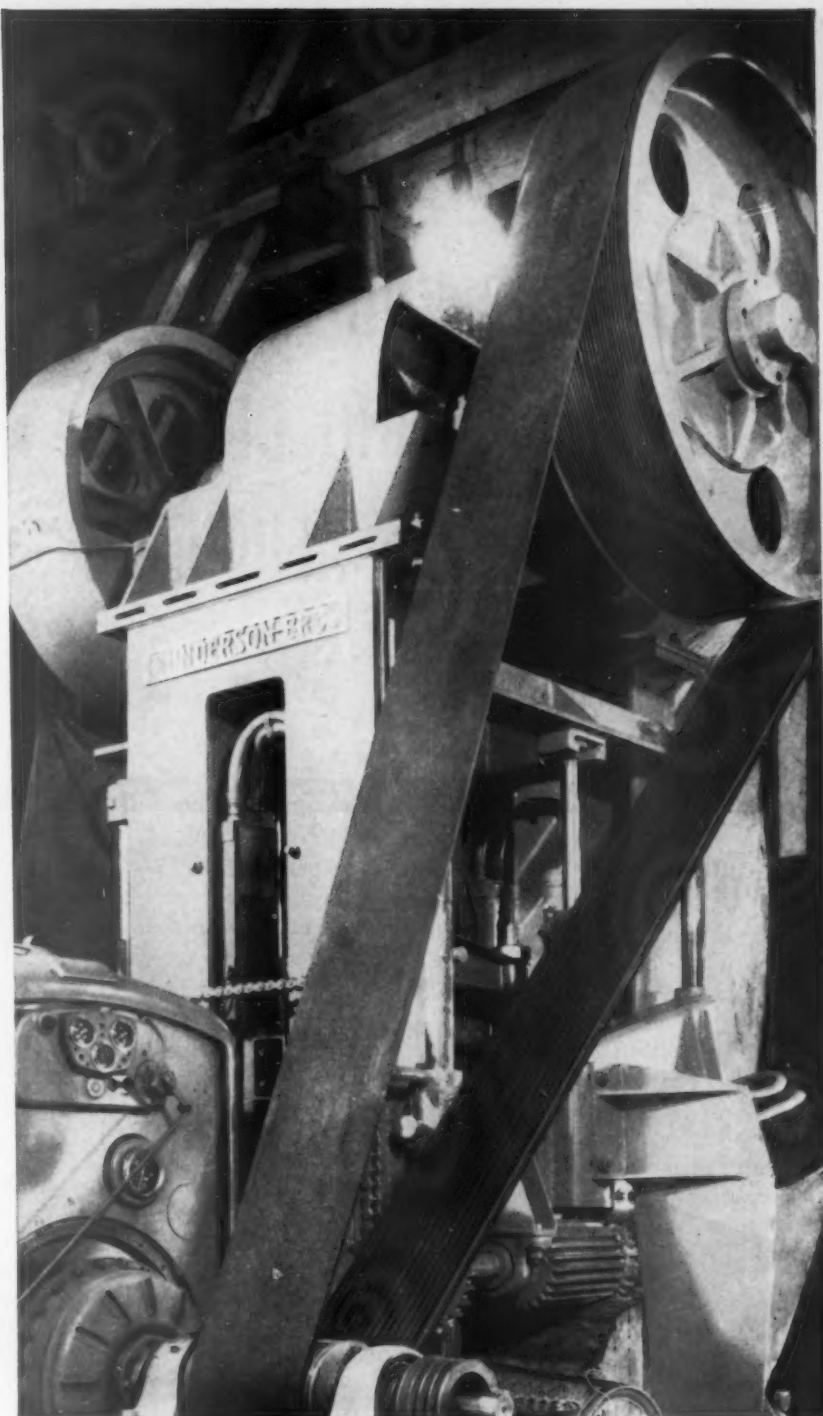
Good grip and positive tracking are assured with this new transmission belt of neoprene, Du Pont's chemical rubber. V ribs prevent slipping on the sheaves . . . belt runs cool because of its greater surface area. And manufacturer of the belt claims a 30-50% increase in drive capacity over a multiple V-belt system of comparable width and eliminates matching problem.

Wear is even on the new belt, regardless of load and load changes. The V ribs fit evenly into the sheaves under all conditions; the drive ratio is unaffected. Because it's made with neoprene, this new belt resists abrasion, weathering, oil, grease—all causes of failure in ordinary rubber products. One of these new neoprene belts has already given a year's perfect service driving a stone crusher, despite severe shock loads, heat and contact with oils and grease.

This new belt helps reduce belt and sheave inventories through its unusual design. Because it is made of neoprene, it provides *extra-long service life* . . . keeps maintenance and replacement costs low. Be sure to ask your rubber-goods supplier about the many neoprene products now available.

REMEMBER, OF ALL RESILIENT MATERIALS, ONLY NEOPRENE HAS BALANCED RESISTANCE TO:

- Corrosive atmospheres
- Oils, solvents, most chemicals
- Sunlight and weathering
- Flex cracking and heat
- Abrasion, cutting, chipping
- Oxidation and aging



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BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

MAIL THIS COUPON TODAY!

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7 CUES

ON HOW YOU CAN CUT FABRICATING COSTS WITH ALCOA® ALUMINUM EXTRUDED SHAPES

WHERE TO START

Just in case you've never had occasion to inquire into the economics of extruded shapes, here's a thumbnail summary in one sentence: complicated cross sections are easy to produce; as a result, their unit prices are low.

So you can count on better design, and faster assembly (and, of course, lower costs) by using extruded shapes for complex cross-section parts. For example:

1. You can get stronger shapes with the same amount of metal, if you use an extruded shape instead of a standard rolled shape. (You can redesign the cross section to fit specialized stresses your use requires.)
2. You can combine into one shape what would otherwise be assemblies of several members. There's hardly any limit to the number of cross sections you can combine.
3. You can cut blanks from an extruded shape faster and cheaper than you can produce the blanks in casting or forging form. (It's like cutting bite-size pieces of candy from a roll, instead of molding each piece separately.)

4. You can start with the finished design of the cross section, rather than standard bar and plate that must be machined to shape. (This cuts out much of the expensive machining equipment, man power and scrap metal you'd inevitably run into with conventional methods that start from scratch.)

5. You can count on structural strength at least as good as, if not better than, that of any other metal-forming method. (Extrusion kneads the metal thoroughly, giving a nonporous, homogeneous, thoroughly worked structure that is extremely high in tensile and yield strength.)

And, remember—"We can do what you can doodle. If you can sketch the cross section, we can extrude it."

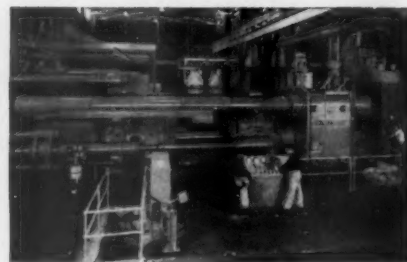
That's where to start. Now for some specifics you should know about when you're thinking in terms of Alcoa Aluminum Extruded Shapes.

WHAT'S NEW IN ALCOA EXTRUSION DESIGN?

In terms of cross section, almost every extruded shape we produce is new—

because there's an almost limitless variety of design, both solid and hollow. But that's not the kind of design development we're talking about.

The big news is the installation of a 14,000-ton giant extrusion press at our Lafayette, Indiana, plant—and a companion hydraulic stretcher with a 3,000,000-lb pull, for straightening and stress-relieving the extrusions—which can be as long as 110 feet and weigh as much as 2,500 lbs.



King-size contribution to better aluminum extrusions—the 14,000-ton press at Alcoa's Lafayette, Indiana, plant.

You may never need an extruded shape that big—but large presses still are important to you as a designer. Even though the shape you want is shorter or lighter, you can design a larger and thinner cross section than would be possible with a small press.

The boys who are finding this king-size production facility a particular boon are the aircraft designers. They're able to get ribbed extruded shapes in greater widths and with thinner cross sections for use in wing panels and bulkheads. But they aren't the only ones benefited. The new press capacities are equally applicable on extruded panels for architectural and marine use, (and on the production of pipe in diameter sizes up to 20").

And the best news is that smaller shapes such as those used in the manufacture of window frames, truck bodies and frames, building panel and portable irrigation pipe are becoming more and more economical to produce on Alcoa's complete range of extrusion presses.

WHAT ABOUT COSTS?

You've a pleasant surprise in store for you if you are a new convert to the efficiency of extruded shapes. Not only can you do things that would be impossible by any other metal-forming method, and things that otherwise would cost more in fabrication, assembly and finishing—but base costs are low, too.

The die and support tools to produce an extruded shape are normally much less expensive than the first costs for a forging, casting or fully machined part. For example, the average solid extruded shape under 3" in circumscribing circle diameter would have die and tool charges of only about \$120—and one with a 5" circumscribing circle diameter would increase the charges to approximately \$300. More complex and larger shapes, of course, require higher cost dies—as do semi-hollow and hollow shapes. But they're still economically low.

There are two considerations you should know about when you design special shapes. First, the thinner the shape, the more difficult (and, hence, more expensive) it is to extrude. Second, the same is true the more you depart from a symmetrical, balanced cross section.

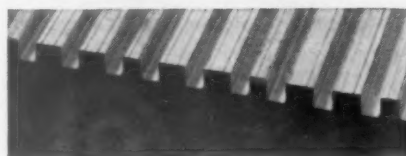
These are combined in a "factor"—the result of dividing the perimeter of the shape in inches by its weight per foot in pounds. Generally, the lower the "factor," the lower the price per pound. But bear in mind that the higher cost per pound of thinner shapes may be more than offset by the lighter weight per piece, thereby justifying the expenditure.

In any event, where substantial production is involved, die charges are almost negligible compared to the savings. And where a special design would not justify the die charges, there are many standard shapes on which no die charge is made. These include a range of angles, bars, channels, H-beams, I-beams, tees, zeeks and a number of architectural, truck body and aircraft shapes.

HOW TO MULTIPLY CROSS-SECTION SIZE

Suppose, for example, you wanted an extruded shape with a cross section measuring 20" x 3". You may be

able to divide the final section into six or eight 3" deep components, producing each section as a separate extrusion that will interlock with its mates to form the final cross section, 20" x 3". Slip-fit or snap-fit joints speed assembly, using dovetail, tongue and groove, shiplap or offset couplings designed into the separate sections. And you've multiplied the size of the final shape without multiplying production costs as much as you would if you had started with one 20" extrusion. Then, too, you can get a thinner section than by extruding the entire assembly in one piece. If desirable, we can even deliver the components roll-locked into one final piece up to 24" wide.



How to make big ones out of little ones—interlocking assemblies of extruded components.

STEPPED EXTRUDED SHAPES

The aircraft industry needs no introduction to this innovation—for stepped extrusions are being used in large volume for wing spars. Basically, these stepped shapes provide two or more cross sections in a single extruded length, permitting fabrication of a large end integral with and stepped down to a smaller cross section at the other end. In this way a tapered section can be milled, leaving a large, heavy end for attachment purposes. The saving in machining time and chips is tremendous.



Stepped extrusion—saves machining.

WIDE-RIBBED EXTRUDED SHAPES

Here's another twist, made possible by the 14,000-ton press, that's expanding the possibilities for extruded shapes. To obtain widths appreciably wider than the diameter of the ex-

trusion ingot, wide sections are extruded in a vee configuration, then flattened and given final processing.

NO LIMIT ON INGENUITY

If you can doodle the design, we can extrude it. That's no idle boast—and here's a typical example to prove it: Epco Snap-On acoustical walls are the result of an idea brought to our extrusion engineers in the development stage. And the outcome is a decorative, highly useful way of installing acoustical board with a minimum of time and expense. An aluminum extrusion forms the mounting channel which is fastened to the old wall. A mating male channel, also an extrusion, carries the perforated acoustical board—and this can be snapped into place in a matter of minutes, or removed for painting, washing or alterations.



Epco Snap-On Walls—an outgrowth of an idea that depends on Alcoa Aluminum Extrusions (E-1 and E-2.)

STRAIGHT TALK

Many a production problem is being solved by Alcoa Aluminum Extruded Shapes. And when you want us to contribute solid technical thinking at the design stage, call your local Alcoa sales engineer. You'll find him listed under "Aluminum" in your phone book. Use him.

Your Guide to the Best in Aluminum Value



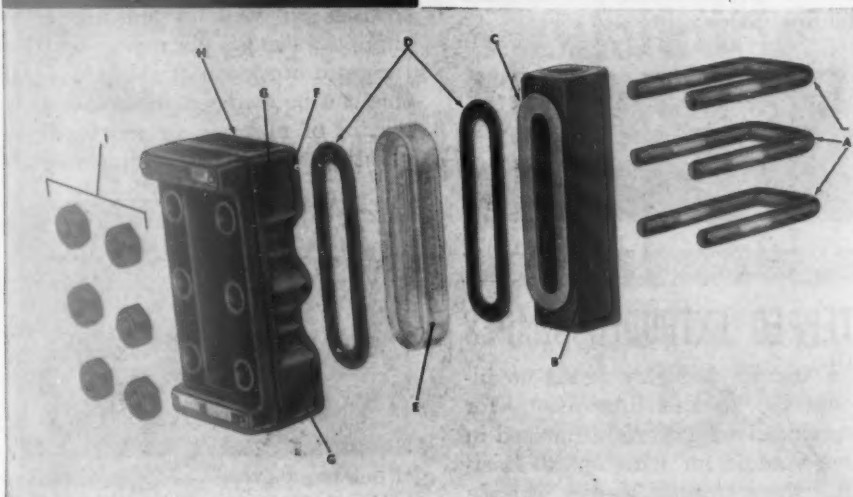
ALWAYS FASTEN ALUMINUM WITH ALCOA ALUMINUM FASTENERS

For More Information Circle No. 368 on Inquiry Card—Page 17

HERE'S WHY PENBERTHY REFLEX GAGES OFFER EXTRA ADVANTAGES

CLEAR, ACCURATE LIQUID-LEVEL READINGS
in all tanks, boilers, vessels, containers, flow lines.
PENBERTHY REFLEX GAGES TYPE V & S

- A** Alloy Steel Bolts for high temperature service
- B** Alloy Steel Liquid Chamber heat treated to prevent warping
- C** Raised Face on Liquid Chamber insures perfect self-alignment of frame with glass and gasket.
- D** Special Composition Gaskets and Cushions are interchangeable
- E** Resilient Band around glass centralizes it at assembly.
- F** Drop Forged Steel Frame extra heavy and rigid
- G** Extra heavy beam at end of Frame (prevents distortion when bolts are tightened to meet high pressure service)
- H** Frame overlaps liquid chamber at all points — provides full backing for the gasket preventing blow-outs
- I** Alloy Steel accurately threaded nuts



RAISED FACE IS EXCLUSIVE FEATURE

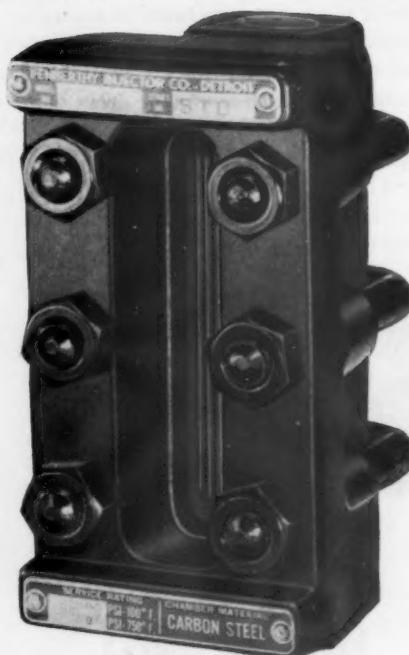
The construction of a Penberthy Gage invites comparison to prove superiority. Note especially the easy glass or gasket replacement and glass cleaning made possible by the fully accessible **RAISED FACE**. Perfect alignment of frame with glass and gasket is assured. Gasket surface can be repaired without removing assembly from vessel.

Designed for temperatures ranging from sub-zero to over 1000°F. and for test pressures exceeding 15,000 psi., Penberthy gages are used extensively for liquids ranging from water to highly corrosive and dangerous chemicals.

Available in a wide variety of materials including bronze, iron, carbon steel, stainless, monel, etc.

WRITE for Catalog No. 35. Order through your jobber or direct.

PENBERTHY INJECTOR COMPANY
Division of the Buffalo-Eclipse Corporation
1242 Holden Avenue, Detroit 2, Michigan



There's Certain Satisfaction in
PRODUCTS BY



- GAGES
- EJECTORS
- EDUCTORS
- EXHAUSTERS
- SYPHONS
- ELECTRIC SUMP PUMPS
- CYCLING JET PUMPS
- INJECTORS

For More Information Circle No. 369 on Inquiry Card—Page 17

news

(Continued from page 284)

In the consumable electrode vacuum remelting procedure, cast electrodes are made of an alloyed, predetermined composition from a large production-size, electric furnace melt. These electrodes are then remelted under vacuum by arc melting in a water-cooled, copper crucible. To date, vacuum melted ingots up to 12" diam and 1000 lb have been made from nickel base alloys, and up to 16" diam and 2000 lb in the iron base alloys, as well as in stainless and other steels.

Test results prove that the finished product from these ingots show that the process offers the following advantages over direct-arc furnace melted materials: (1) a higher degree of cleanliness through removal of non-metallic inclusions and excess gas; (2) Better compositional homogeneity; (3) improved workability and ingot soundness; (4) general improvement in mechanical properties. The method, however, is not as effective as induction vacuum melting in producing ultra-high purity metals and alloys.

Titanium Fasteners Equal High Strength Steel Bolt

Titanium flush-head shear bolts, that can be substituted directly for conventional alloy steel bolts weighing 75% more, are in production. The 100° flush head bolt is fabricated from a 4% aluminum, 4% manganese alloy of titanium. Since the fastener is widely used in aircraft design—each pound of which can replace 1 3/4 lb of conventional steel fasteners—it can add hundreds of pounds of usable payload to commercial airplanes. Tests show that the 1/4" and 3/8" diam titanium flush head bolts had shear strength of over 108,500 psi—far in excess of the minimum shear requirements for this type of fastener. Other properties are equally outstanding. The fasteners are produced by Standard Pressed Steel Co., Jenkintown, Pa.

IF YOU'RE

20%

RIGHT

YOU'RE

100%

RIGHT



All paint jobs are divided into two parts . . . the *materials part*, which represents not over 20% of your total costs, and the *labor part*, which represents a big, fat 80% or more. And the first part can affect the second part tremendously.

That is why experienced paint buyers in leading industrial plants the country over insist on *Barreled Sunlight* . . . even though *Barreled Sunlight* might cost a few pennies more per gallon.

They know, *from experience*, that *Barreled Sunlight Super Hiding** maintenance paints take up to a full gallon of thinner to the five-gallon bucket . . . a not-to-be-overlooked factor that cuts materials costs appreciably. And, what is even more important, they also know *from experience* that *Barreled Sunlight's* extra yardage, solid covering and ease of brushing also cut all-important *labor costs* with which every industrial executive is all too familiar.

So, on YOUR next paint job, why not be 100% right? Use the paint that cuts labor costs as well as material costs. Get the job off on the right foot with *Barreled Sunlight* and you'll end up with both feet on the ground, costwise and performancewise.

Write for free copy of the *Barreled Sunlight "Engineered Color"* catalog and name of your nearest *Barreled Sunlight* representative. *Barreled Sunlight Paint Co.*, 18-A Dudley St., Providence 1, R. I.



Barreled Sunlight *Paints*

*Reg. U. S. Pat. Off.

In whitest white or clean, clear, wanted colors, there's a *Barreled Sunlight* Paint for every job

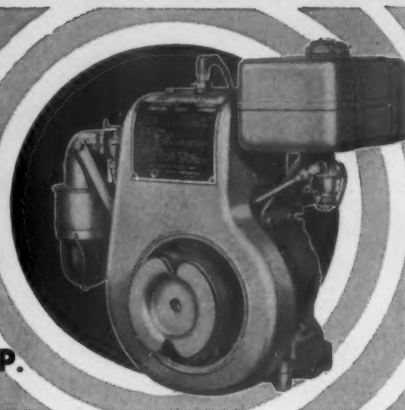
For More Information Circle No. 370 on Inquiry Card—Page 17

JANUARY, 1956

289

Another NEW WISCONSIN Heavy-Duty *Air-Cooled* ENGINE

The Model BKN 3.2 to 6.8 H.P.



Brand new in design, this engine meets the increasing demand among original equipment manufacturers and engine power users for a compact, light weight, HEAVY-DUTY Air-Cooled Engine that offers a broad, flexible power range.

With a 17.8 cu. in. displacement, the new Model BKN delivers 6.8 hp. at its top speed of 3600 rpm., and a 3.2 hp. at a minimum speed of 1600 rpm. Incorporated in this engine are all of the traditional Wisconsin Heavy-Duty features, including tapered roller bearings at both ends of the crankshaft; high tension rotary type *outside* magneto with Impulse Coupling; pump-circulated, constant-level splash lubrication system and efficient AIR-COOLING at all temperatures from sub-zero to 140° F.

For detailed specifications write for Bulletin S-183.



WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 46, WISCONSIN

For More Information Circle No. 371 on Inquiry Card—Page 17

A 8545-1/2-A

TOOL WEAR...-75%
MACHINING SPEED...+100%
ON THIS GRAY IRON RING



...thanks to
FERROCARBO®

Users everywhere report similar experiences. In fact, on 67 machining tests in 11 large machine shops, castings of gray iron treated with FERROCARBO averaged 89.5% greater machinability per tool than untreated castings. These premium castings are finer-grained, denser, stronger, yet they COST YOU NO MORE...because your foundryman, using FERROCARBO, makes worthwhile savings in raw material costs.

FOR FREE BOOKLET on FERROCARBO, citing actual case histories of faster machining, with longer tool life, write The Carborundum Company, Dept. 33, Niagara Falls, N.Y. 84-53

CARBORUNDUM®

For More Information Circle No. 372
on Inquiry Card—Page 17

DESK-TYPE BUYING GUIDE

... cuts your source-finding time in half

You can consult this desk-type industrial buying guide without getting up from your desk. Can be picked up with one hand, yet C-MPD is surprisingly complete. Reasons: (1) elimination of



non-industrial listings, (2) up-to-date, ingenious indexing system.

Cloth-bound. 1,400 pages. Contains buying guide, trade name section, mechanical data section, special chemical section, and a separate address section.

**CONOVER-MAST
PURCHASING DIRECTORY**
205 E. 42nd St., New York 17

Product Price Index

(Continued from page 119)

in your index sample, obviously you have to remove it when it is no longer purchased. On the other hand, if you start buying an item that is expensive enough to have been used in the index sample, you should add it to the index. However, you can't simply add or subtract a part to your index without any adjustment. Both the economic index and the product price index will be distorted just like the economic index would have been with the engineering changes on parts 102 and 103. Consequently, when there is a make-and-buy change, both the product price index and the economic index must be adjusted the same way we adjust the economic index for engineering changes. Revision of the base period cost of both indexes is necessary since the part isn't new to the product.

How Much Work?

Setting up an index isn't an easy job. In fact it takes a lot of careful, tedious work. However, once the index is set up, it needn't be too difficult or expensive to maintain. If, for example, you have an index for a product with about 200 hundred parts, there is no reason why the monthly gathering of data and computations should take more than 8 hours of efficient clerical labor. Whoever gathers the data and makes the computations should be a cut above the average clerk if errors are to be avoided. The computations require extreme accuracy and the individual making them should be very conscientious.

Though indexes take time and cost money, many companies find them worthwhile. They are another tool with which purchasing is proving it can make important contributions to the successful and profitable operation of businesses.

**FOR MORE INFORMATION
ON PRODUCTS IN
THIS ISSUE
USE INQUIRY CARD—PAGE 17**

UNLIMITED HORIZONS

THE NEW LIGHTWEIGHT U.S.A.F. J4 COMPASS SYSTEM PERMITS PRECISE FIGHTER NAVIGATION AT ALL LATITUDES

ANOTHER MAJOR GYRO PROBLEM SOLVED BY WEAPONS GUIDANCE LAB. U.S.A.F. AND KEARFOTT

This miniature Kearfott Directional Gyro is the heart of the U.S.A.F. J4 Compass System. The System provides both latitude corrected and magnetic slaved directional gyro heading information. Suitable output transmitters are incorporated to supply compass data to autopilots, course indicators, and other systems requiring this information. This system provides all the functions of the Kearfott designed U.S.A.F. N1 Compass System with little loss in accuracy despite a 66% reduction in weight. The J4 Compass System as designed by Kearfott was selected by the Air Force "... due to its adaptability to product improvement and Kearfott's ability to meet the urgent requirements of the Air Force."

OTHER KEARFOTT GYROS IN PRODUCTION

VERTICAL GYROS: Precise verticals with 2 mins. vertical accuracy (Bench) weigh 7 pounds and measure $5\frac{1}{2}$ " diam. x $6\frac{1}{2}$ " high. Miniature verticals with 15 mins. vertical accuracy weigh 3.5 pounds and measure $3\frac{1}{2}$ x $3\frac{1}{2}$ x 4" approx.

FREE GYROS: Designed specifically for missile applications with 1° per minute drift. Under 2000 cps vibration at 3G drift will not exceed 5° /min. The gyro withstands 60G shock.

FLOATED RATE INTEGRATING GYROS: Designs include 2.5×10^6 , 2×10^6 and 6×10^6 wheels. Representative random drift rate .25 $^\circ$ /hour on day-to-day basis. Standard deviation for one day run .05 $^\circ$ /hour.

STABLE PLATFORMS: 3 gyro, 3 and 4 gimbal designs now in development, flight test or production are suitable for primary gyro reference or for inertial applications.

There is a Kearfott Gyro suitable for every aircraft and missile application. Write today for detailed technical data.

KEARFOTT COMPANY, LITTLE FALLS, N. J.

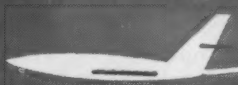
Sales & Engineering Offices: 1378 Main Ave., Clifton, N. J.
Midwest Office: 188 West Randolph St., Chicago, Ill.
South Central Office: 6115 Denton Drive, Dallas, Texas
West Coast Office: 253 N. Vineland Ave., Pasadena, Calif.



U.S.A.F. J4 Directional Gyro
Random drift rate 3° per hour max.
Weight $7\frac{1}{2}$ lbs.



A SUBSIDIARY OF
GENERAL PRECISION
EQUIPMENT CORPORATION



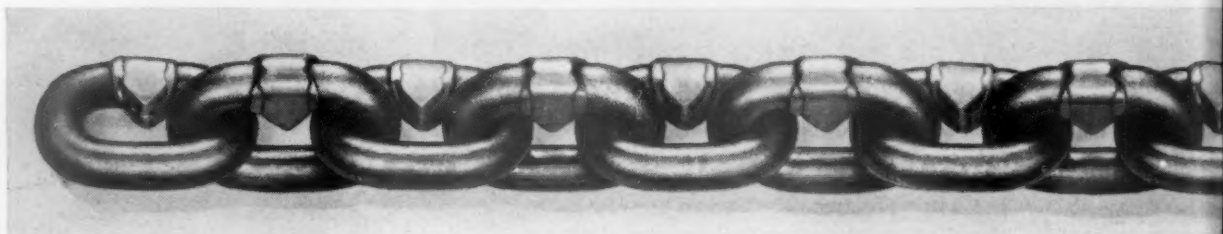
ACCO
products

ACCO's Great New Chain

ACCOLOY X-WELD 125

The sensational new ACCOLOY X-WELD 125 CHAIN represents the greatest improvement in chain since electric welding! It has hitherto-undreamed-of welding strength, chain stamina and long life. And—it is versatile almost beyond belief.

This chain *won't* kink; it hangs straight as a die—always! Every link is perfectly formed. In hundreds of destructive tests—straight pull and sharp bending—not a single break at the weld has occurred.



The secret is in the weld

The single Accoloy X-Weld 125 link shown at the right was ground and etched to show the big welded area— $2\frac{1}{4}$ times the area obtained by normal welding methods. This *exclusive X-Weld feature* gives more than double security at the weld!



Now—cut your chain costs

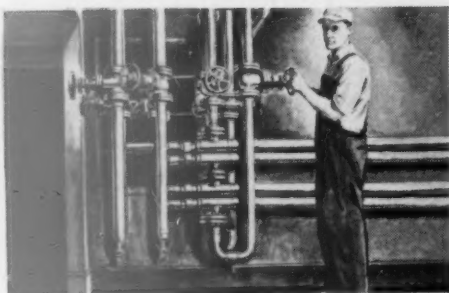
There's real economy in using Accoloy X-Weld 125 Chain for slings, bundling, towing, and general utility chains. It is available in five sizes ($\frac{1}{4}$ " to $\frac{3}{4}$ "), and in special analyses and heat treatments for specific jobs. Its high strength-size ratio, its resistance to wear, and its unique trouble-free performance characteristics add up to long-range savings—and better value!



American Chain & Cable Company, Inc.

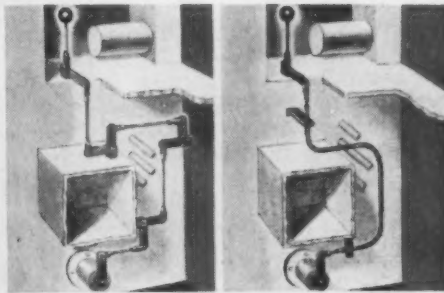
SALES OFFICES IN: Atlanta, Bridgeport, Conn., Boston, Chicago, Denver, Detroit, Exeter, Pa., Houston, Los Angeles, Monessen, Pa., New York, Philadelphia, Pittsburgh, Portland, Ore., Reading, Pa., San Francisco, Wichita, Kans., Wilkes-Barre, Pa., York, Pa.

ACCO OFFERS BETTER VALUES IN THE PRODUCTS SHOWN BELOW AND LISTED AT THE RIGHT



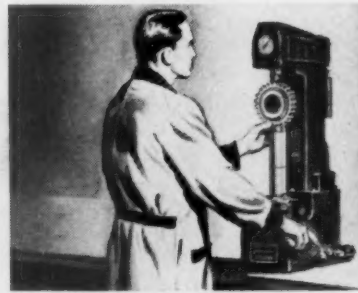
R-P&C VALVES

Satisfied users say R-P&C also stands for **Reliable Protection & Control**. Bronze, iron, steel and bar stock valves.



TRU-LAY PUSH-PULLS

They simplify design and improve operation by eliminating links and levers. Solid as a rod, yet flexible as wire rope.



WILSON "ROCKWELL"

For exact checking of hardness, WILSON "Rockwell" Testers have no equal.

BETTER VALUES

— Key to Better Business

The first step toward giving better values is to insure the quality, durability and usefulness of your products. This is made possible by getting better values in the materials, components, machines and equipment used in their manufacture.

AMERICAN CHAIN DIVISION
Weed Tire Chains • Welded and Weldless Chain
Acco Registered Sling Chains

AMERICAN CABLE DIVISION
Tru-Lay Preformed Wire Rope
Acco Registered Wire Rope Slings • Tru-Loc Assemblies

AUTOMOTIVE and AIRCRAFT DIVISION
Aircraft Cable, Controls, Fittings
Tru-Stop Brakes for trucks and buses

ACCO CASTING DIVISION
Electric Steel and Malleable Iron Castings

CAMPBELL MACHINE DIVISION
Wet Abrasive Cutting Machines • Nibbling Machines

FORD CHAIN BLOCK DIVISION
Chain Blocks • Electric Hoists, Trolleys

HAZARD WIRE ROPE DIVISION
Lay-Set Preformed Wire Rope
Acco Registered Wire Rope Slings • Tru-Loc Assemblies

HELICOID GAGE DIVISION
Pressure, Vacuum or Compound Gages

MANLEY DIVISION
Automotive Equipment for garages and service stations
OWEN SILENT SPRING DIVISION
Owen Springs and Units for mattresses and furniture

PAGE STEEL and WIRE DIVISION
Welding Wire, Shaped Wire, Manufacturers' Wire,
Chain Link Fence

PENNSYLVANIA LAWN MOWER DIV.
Power and Hand Lawn Mowers

R-P & C VALVE DIVISION
Bronze, Iron & Cast Steel Valves • Steel Fittings

WILSON MECHANICAL INSTRUMENT DIVISION
"Rockwell" Hardness Testers

WRIGHT HOIST DIVISION
Wright Chain Hoists, Electric Hoists, Cranes

THE ALLISON COMPANY
Rubber and Resinoid Bonded Abrasive Wheels

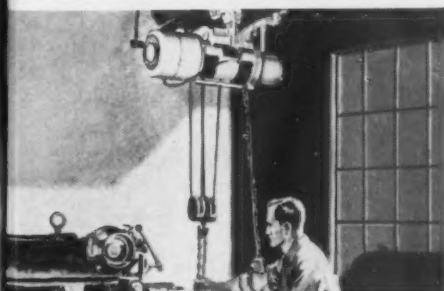
THE BRISTOL COMPANY
Automatic Control, Recording and Telemetering
Instruments, Aircraft Controls, Socket Screws

THE MARYLAND BOLT and NUT CO.
Bolts and Nuts • Lag Screws and Forgings

IN CANADA: DOMINION CHAIN COMPANY, LIMITED
THE BRISTOL COMPANY OF CANADA LIMITED
IN ENGLAND: BRITISH WIRE PRODUCTS, LIMITED
THE PARSONS CHAIN COMPANY, LIMITED

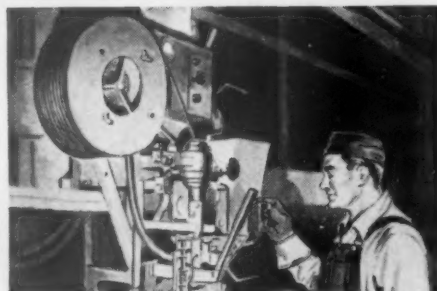
Information on any ACCO product gladly sent on request. Address your inquiry to Market Development Department, American Chain & Cable Company, Inc., 929 Connecticut Avenue, Bridgeport, Connecticut.

**Better
Values**



WRIGHT HOISTS

The WRIGHT Speedway is a heavy-duty work horse, and is the easiest hoist to service.



PAGE WELDING WIRE

PAGE offers most popular grades and sizes of welding wire, in a variety of convenient packages, from local distributors' stocks.

LOOK TO **WILLSON** for another new development in head protection!



**NOW—SUPER-TOUGH
PHENOLIC
SAFETY HATS AND CAPS**

FROM THE WILLSON RESEARCH CENTER now comes the "Phenolic" line of scientifically designed safety headgear that meets all specifications with ease!

In this Super-Tough line are safety developments so outstanding that you'll find it offers unequalled value. For instance, the famed "geodetic suspension" and the unique pneumatic headband are obtainable in both adjustable *lace-in* and *snap-in* types of hats and caps.

Ask your Willson distributor to demonstrate the heavy duty Phenolic line that combines comfort and maximum head protection. Or write for latest "Super-Tough" bulletin describing them in detail.

Strongest Made!

See how it's built up from 24 individual die cut pieces into a sturdy Phenolic pattern that withstands repeated 80-foot-pound drop ball tests without even fracturing!



LACE-IN SUSPENSION

Both hats and caps are available with convenient lace-in suspension feature. Easily adjusted for snug comfort to any head size.



SNAP-IN SUSPENSION

Handy Center-Tie snap-in type suspension is also obtainable in Super-Tough hats and caps. Willson's exclusive patented "Geodetic Suspension" and Pneumatic Headband can be had in any style!

WILLSON PRODUCTS, INC.
221 Washington Street, Reading, Pennsylvania

For More Information Circle No. 411 on Inquiry Card—Page 17



Over 300 safety products carry this world-famous trademark

Credit Reports

(Continued from page 95)

divide that amount into total accounts and notes receivable. The answer shows about how many days it takes a company to collect its bills. In a healthy business, the collection period is no more than one third greater than its selling terms. For example, if terms are 2%—10 days, net 30 days, the average collection period shouldn't be over 40 days. Dun & Bradstreet makes a report of collection periods each year in its booklet *Terms of Sale*. It is available to businessmen without charge on request.

The other two sales ratios are **net sales to net working capital** and **net sales to tangible net worth**. According to Mr. Foulke, "the faster a concern is moving, the more chance there is of mistakes . . ." "The two indications of the stress and strain from overtrading . . . are these comparisons of net sales to net working capital . . . and to net worth." He believes "they should be watched closely, particularly as sales expand."

Net Profit Ratios

There are three ratios to measure profitability. They are: **net profits on tangible net worth**, **net profit on working capital**, and **net profit on sales**. These ratios are important in comparing the relative profitability of companies in the same field. A study of their trend is also useful. Mr. Foulke warns that "if net profits are unusually large, [they] should be carefully analyzed to ascertain if the result came from economic factors of a particularly favorable character which might be all too temporary, or from efficient operations and unusually capable, conscientious direction."

Other Considerations

On the balance sheet, there are six items which can become too large. They are: receivables, inventory, fixed assets, current debt, funded debt, advances to related companies or officers and employees. "There is one item," Mr. Foulke says, "which can be

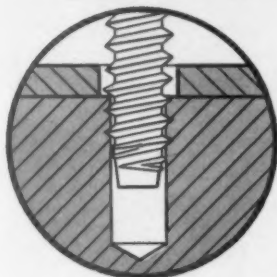
(Please turn to page 296)

For Self-tapping Screws that...

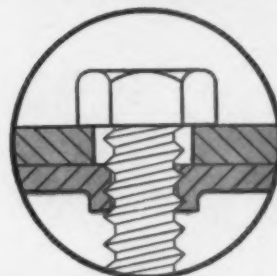
Start Right



Drive Right



Seat Right



Stay Tight



Millions in savings made with P-K Screws since they were originated by Parker-Kalon have proved the Self-tapping Screw *method* reduces assembly costs.

But it takes more than the right method to make sure planned savings pay off. It takes P-K quality standards to guard against defective screws that cause assembly trouble, costly damage to parts, and hidden weakness that shows up in customer complaints.

Only Parker-Kalon can offer P-K quality, the indispensable extra, along with the proved advantages of Self-tapping Screws.

Plan your assemblies for lowest cost . . . a P-K Assembly Engineer will help you. Then make sure *planned savings keep on paying off* . . . when you purchase, order "P-K". Parker-Kalon Division, General American Transportation Corporation, Clifton, New Jersey.

PARKER-KALON®

The First **SELF-TAPPING SCREWS**

originated by P-K . . . and *first* today . . .
the leading choice for fastening economy



Remember

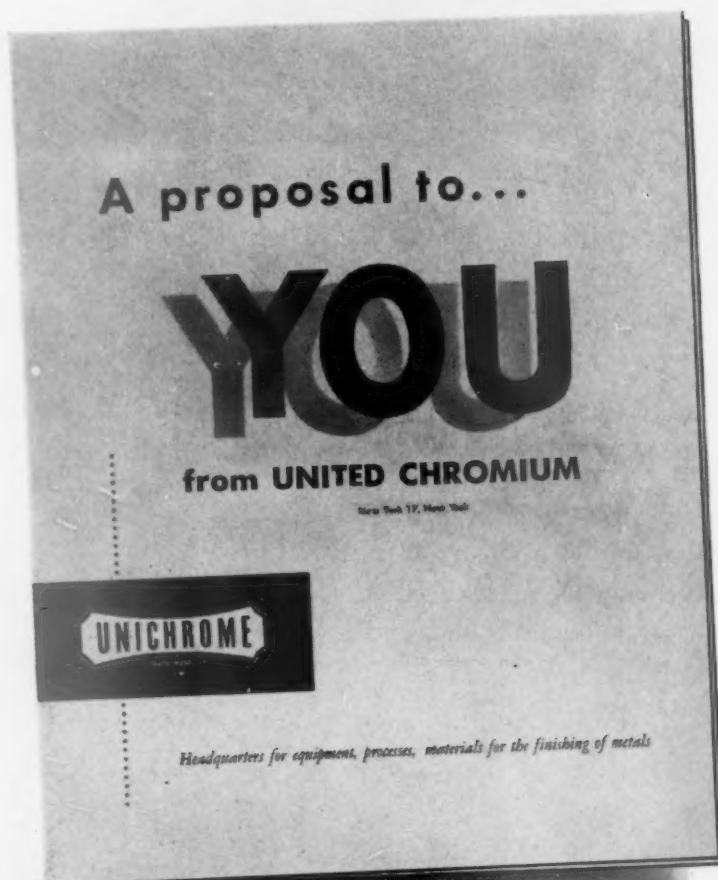
P-K means

OK

How to buy

PLATING EQUIPMENT

with assurance it meets your needs



● You can help save time and money in buying new plating facilities and equipment. United Chromium plans and supplies equipment for general plating . . . offering the benefit of years of close working experience with plating department needs. By working with United Chromium, you can be sure you're buying equipment designed to meet your needs for efficiency, economy, long life.

Unichrome equipment includes such typical items as tanks, rectifiers, pumps, filters, anodes, heat exchangers. In short, equipment for complete installations.

We'll be glad to make a proposal on your needs . . . for a specific piece of equipment or a complete plating installation.



UNITED CHROMIUM DIVISION
METAL & THERMIT CORPORATION

METALLIC and ORGANIC FINISHES . . . EQUIPMENT

100 East 42nd Street, New York 17, N.Y.
Detroit 20, Mich. • Waterbury 20, Conn.
East Chicago, Ind. • El Segundo, Calif.
In Canada: Metal & Thermit-United
Chromium of Canada, Limited, Toronto 1,
Ont.

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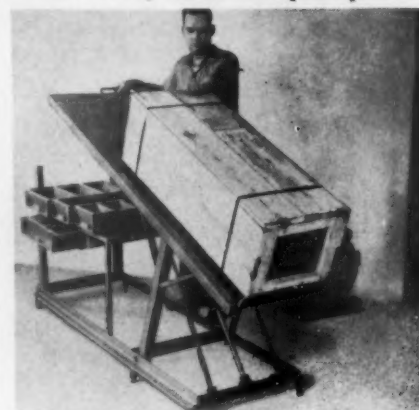
Credit Reports

(Continued from page 294)

come too small for the health of a business." That is net working capital.

Dun & Bradstreet publishes each year current operating ratio patterns for 88 types of business. A spot check of this book (which is available from D & B) can be an excellent guide in making sound buying decisions. Compare industry averages with ratios of your particular vendors. **Though financial analysis is not an end in itself, it is useful tool for scientific purchasing.** When properly applied, it can help prevent a lot of mistakes. Often, it can do more than prevent losses, it can open the way to lower costs and higher profits.

Packing Heavy Materials Safely and Rapidly



A new hydraulically controlled packing bench, which can be tilted to set boxes weighing up to 1000 pounds on the floor after they have been packed, has just been announced by Valley Craft Products, Inc., 770 Jefferson Avenue, Lake City, Minnesota.

Called the Hydra-Tilt Table, this new packing bench has a hydraulic cylinder that allows the operator to automatically tip the load from table to floor by a control lever.

With this packing table, a single operator can quickly move loads up to 1000 pounds to the floor rather than requiring assistance to perform this operation. Safety is another important feature; it eliminates the possibility of injury when moving heavy boxes off the packing bench.

For More Information Circle No. 377 on Inquiry Card—Page 17→

Scandinavia increases steam capacity, cuts costs burning coal the modern way

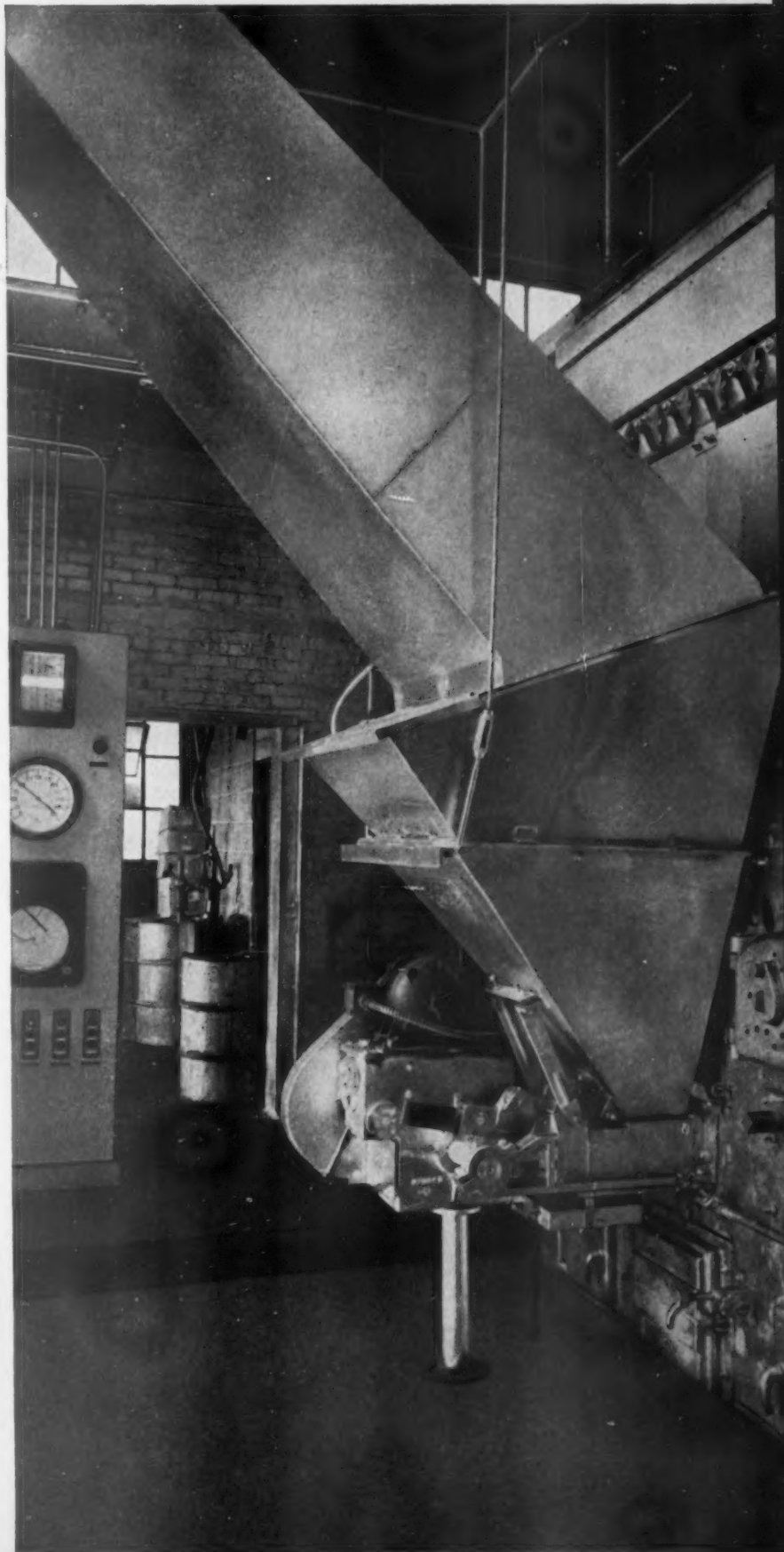
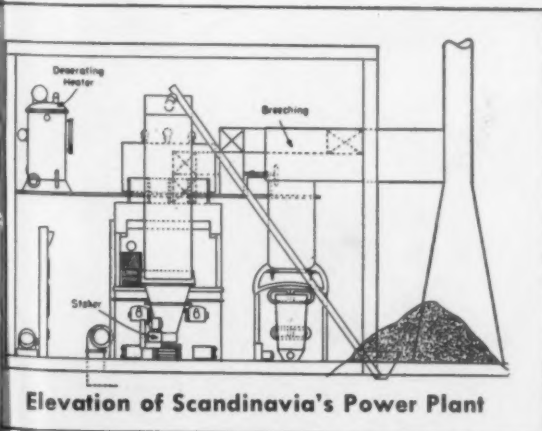
With its old power equipment overloaded by an ever-increasing demand for steam, Scandinavia Belting Co., Charlotte, N.C., took stock of its power situation. Boiler room efficiency was low and maintenance excessive; pressure fluctuated and labor costs had become a problem. Deciding to modernize, Scandinavia instituted a survey of all available fuels. On the basis of cost, coal was chosen. Today, after modernization, Scandinavia's power plant has increased steam capacity 150%, reduced fuel costs 15% and cut labor costs 70%. Increased efficiency and automatic operation have reduced the work force and assured a dependable steam supply at steady pressure with ample reserve for load growth. In addition, the cleanliness of the new plant has been an important factor in raising the morale of the employees.

facts you should know about coal

In most industrial areas, bituminous coal is the lowest-cost fuel available • Up-to-date coal burning equipment can give you 10% to 40% more steam per dollar • Automatic coal and ash handling systems can cut your labor cost to a minimum • Coal is the safest fuel to store and use • No smoke or dust problems when coal is burned with modern equipment • Between America's vast coal reserves and mechanized coal production methods, you can count on coal being plentiful and its price remaining stable.

For further information or additional case histories showing how other plants have saved money burning coal, write to the address below.

NATIONAL COAL ASSOCIATION
Southern Building, Washington 5, D.C.

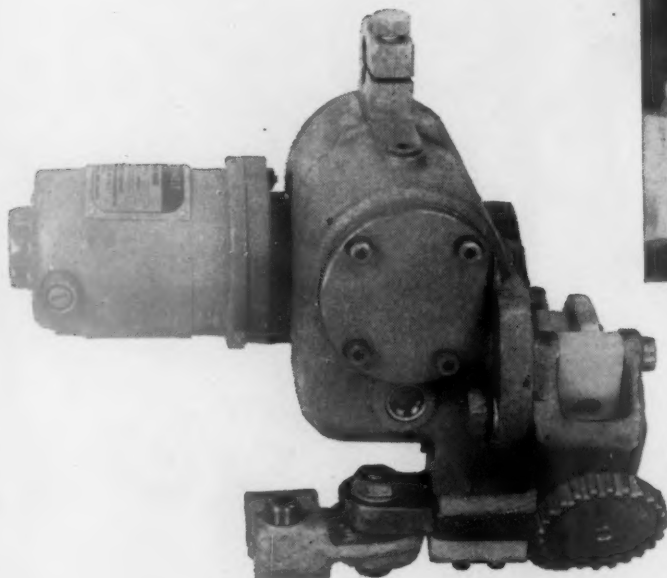
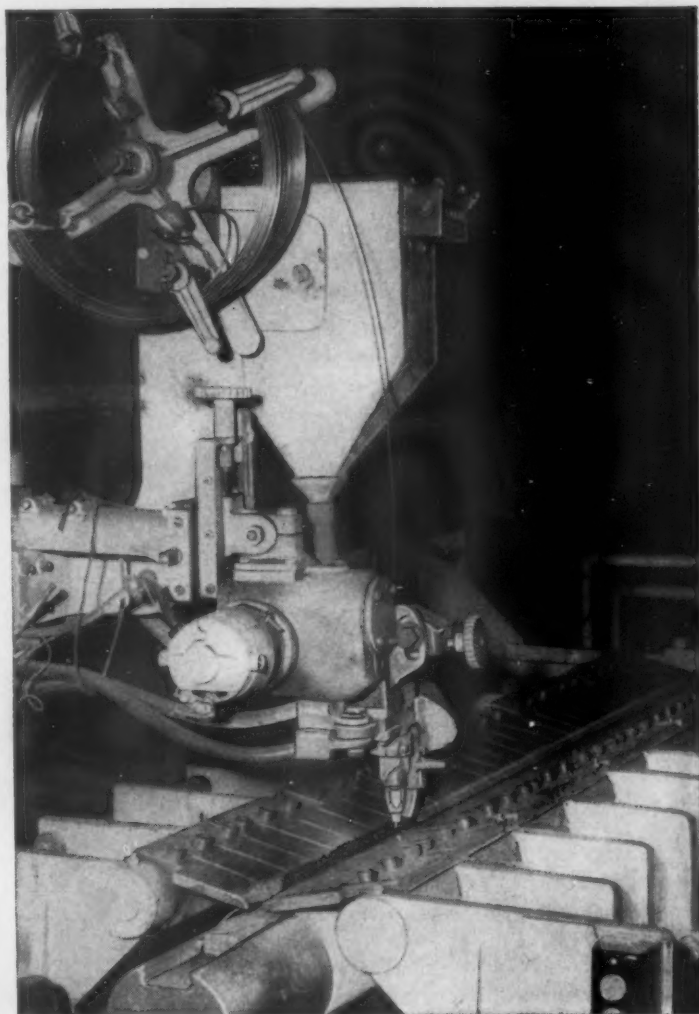


CUT maintenance costs on tough welding jobs with the **New UNIONMELT DSH** welding head

Trade-Mark

Here's the low cost, submerged melt welding head that saves maintenance costs on tough welding operations. The new UNIONMELT DSH head combines the flexibility of the lighter units with the ruggedness needed in heavy-duty welding machines. Large, sturdy gears and bearings give long, trouble-free service though work may involve frequent starts and stops and feeding heavy electrode wire. Simple controls and mounting arrangements make the DSH head easy to operate and maintain.

UNIONMELT welding joins thin metals at speeds up to 200 in. per minute or makes one-pass welds with a 3-inch penetration if desired. If you have a production job in your plant that requires high-quality welds made at high speeds, ask your nearest LINDE Office today for more information about UNIONMELT welding. A LINDE Engineer will be glad to help you plan your UNIONMELT installation for high-speed, production welding.



With the new UNIONMELT DSH head now available in five output speeds, you can select the best unit you need for making high-quality low-cost welds at the highest welding speeds.

Linde Air Products Company

A Division of Union Carbide and Carbon Corporation

30 East 42nd Street **UCC** New York 17, N. Y.

Offices in Other Principal Cities

In Canada: LINDE AIR PRODUCTS COMPANY
Division of Union Carbide Canada Limited, Toronto
(formerly Dominion Oxygen Company)

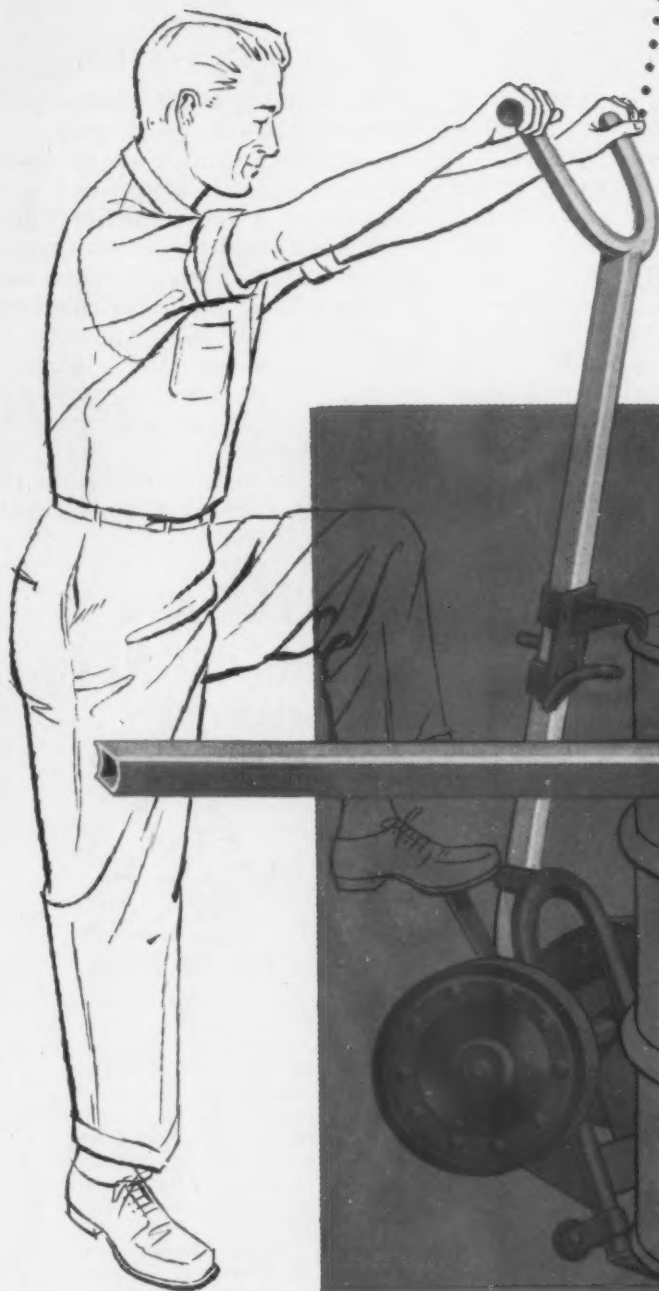
The terms "Linde" and "Unionmelt" are registered trade-marks of Union Carbide and Carbon Corporation.



For More Information Circle No. 378 on Inquiry Card—Page 17

Colson cures
barrel-truck fatigue with

STRONGER BACKBONE FROM OSTUCO



First experimental models of Colson Corporation's barrel and drum handling truck strained, twisted and snapped under loads below their intended 1,000 pound capacity. Failures increased when the Elyria, Ohio, manufacturer tested trucks with heavy loads over rough surfaces.

Tracing trouble to the "Backbone" (the truck's main structural member), Colson and OSTUCO engineers got together, came up with a 1½" square formed seamless tube to solve the fatigue problem. Since 1947, the redesigned drum handling truck has been serving Colson customers, handling loads up to . . . and above . . . its capacity. Successful? Colson has yet to hear of one failure.

Take your cue from Colson. Quality, cost and production problems work themselves out when you talk them over with an OSTUCO engineer. It's easy to start the process by contacting a nearby OSTUCO sales office, or by writing direct to the Shelby factory.

Unique Single-Source Service at OSTUCO eliminates interplant shipment and error . . . another reason why your product can be improved when components are made from



OSTUCO TUBING

SEAMLESS AND ELECTRIC WELDED STEEL TUBING
—Fabricating and Forging

OHIO SEAMLESS TUBE DIVISION of Copperweld Steel Company • SHELBY, OHIO

Birthplace of the Seamless Steel Tube Industry in America

SALES OFFICES: BIRMINGHAM • CHARLOTTE • CHICAGO (Oak Park) • CLEVELAND • DAYTON • DENVER • DETROIT (Ferndale)

HOUSTON • LOS ANGELES (Beverly Hills) • MOLINE • NEW YORK • NORTH KANSAS CITY • PHILADELPHIA • PITTSBURGH • RICHMOND • ROCHESTER • ST. LOUIS • ST. PAUL • SALT LAKE CITY • SEATTLE • TULSA • WICHITA

CANADA, RAILWAY & POWER ENGR. CORP., LTD.

EXPORT: COPPERWELD STEEL INTERNATIONAL COMPANY
117 Liberty Street, New York 6, New York

For More Information Circle No. 379 on Inquiry Card—Page 17



NEW
*heat
sealable*



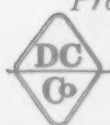
*Instant acting Vapor Wrapper
is now available in the
new Heat Sealable type
(NO. 70 GRADE)
suitable for automatic
and semi-automatic
preservative packaging
of metal parts.*



SMALL OR LARGE

Regardless of whether you produce tiny parts or huge machines, the use of Nox-Rust Vapor Wrapper will provide positive protection of your products while in storage or in transit.

Write on your letterhead to
Daubert Chemical Co.
for information, Dept. B-71



Protective Packaging Div.

Daubert Chemical Co.
formerly NOX-RUST CHEMICAL CORP.
333 N. Michigan Ave.
Chicago 1, Illinois

Mfrs. of: RUST PREVENTIVES, VCI PAPERS,
ADHESIVES, AUTO UNDERCOATINGS.
For More Information Circle No. 380
on Inquiry Card—Page 17

Economic Order Quantity

(Continued from page 85)

inventory up to \$100. So you can't use a fixed restocking cost F for just one lot when computing your total cost of carrying the inventory. You must multiply F for a single lot by the number of lots you actually need.

Now let's assume the value of the lot is \$1000 and, as in the previous examples $F = \$10$ and $R = 20\%$. The cost of carrying \$100 worth of inventory for 12 months is $\$100 + \$10 + \$1$, or \$111. Note that F costs but \$1 in this case. Why? Because the value of the lot exceeds \$100 so we must divide the \$100 by the value of the lot to find what portion of the lot is needed to provide \$100 worth of inventory. In this case, obviously, we need $\$100/\1000 or a tenth of a lot. Since F is \$10 for the entire \$1000 lot, we allocate a tenth of this or \$1 to the \$100 worth of inventory. A similar procedure is followed in all cases where the value of the lot exceeds the \$100 on which we base our calculations in the table.

When the material is carried in inventory less than 12 months, obviously you must figure R for a fraction of a year. To do this, you calculate what it would be if the period were 12 months and then multiply by the fraction of the year in which the material is actually going to hold. Referring to the example in the preceding paragraph, let's suppose the period were 2 months instead of 12 months. R would then be but $1/6$ th the amount. Instead of \$10, it would be $\$10/6$ of \$1.67.

The number of calculations you actually need in your tables of inventory carrying costs depends actually upon what you buy and the range of the values of shipments with which you must cope. Though making up the tables involves a lot of tedious calculation, you've got one consolation. Once they're made up, they're a snap to use. If a supplier offers you a better price if you will agree to take a larger quantity, all you need do is look at the table to see whether it's really a good deal or not.



HAE-M179-1255

SPECIAL FORGINGS

are also available too, we quickly furnish special block for varied needs. fittings and replacement sheaves. Write us. Remember

**YOU'LL SAVE
TIME and MONEY**
BY SPECIFYING
CORRECTLY ENGINEERED
AND LOAD RATED



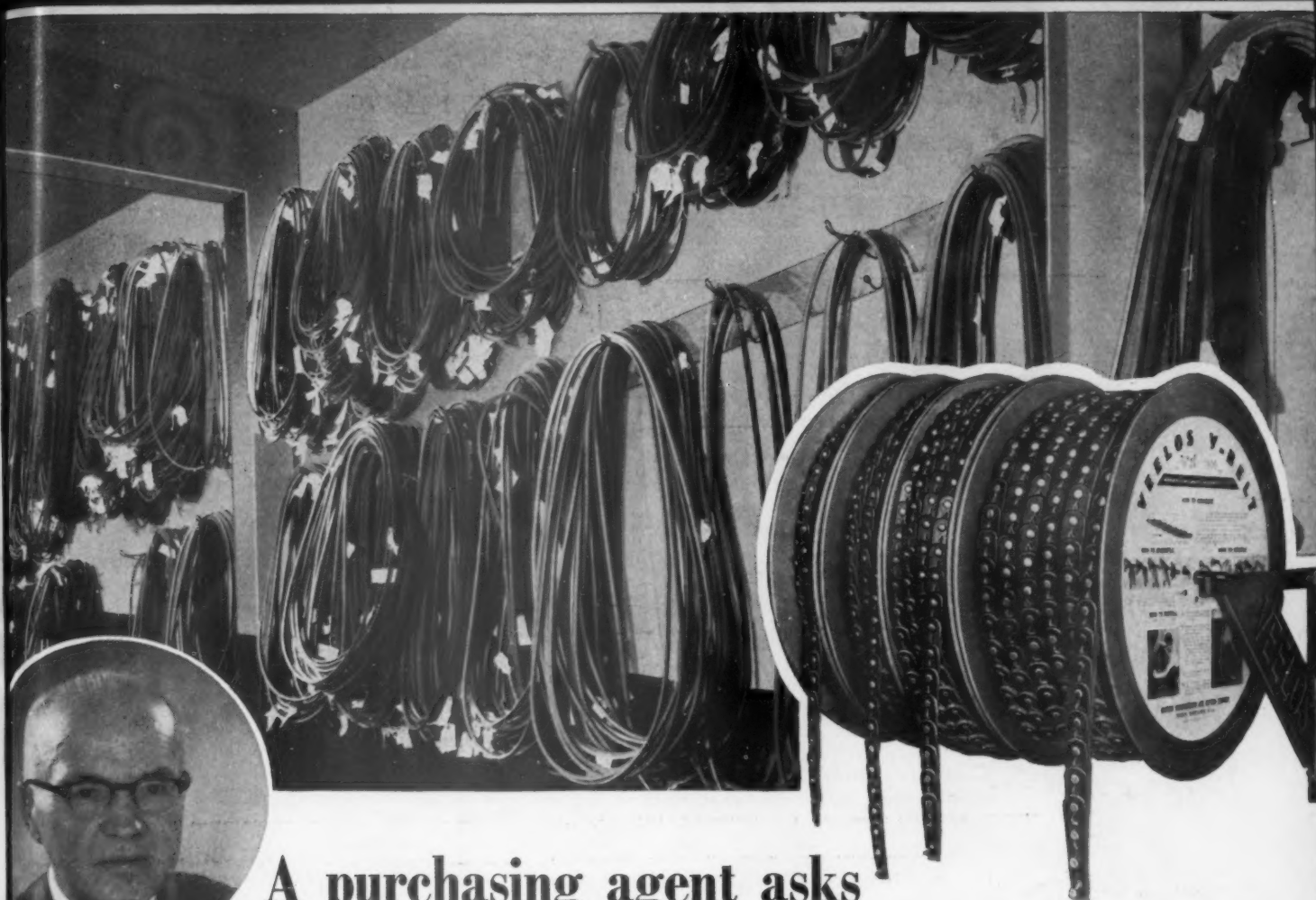
WORTH ASKING FOR—BY NAME

● No matter what your lifting problem, MADESCO can supply from stock—or make to specification—the most suitable load-rated tackle blocks for your individual needs. For over thirty years, Madesco has designed, engineered and built tackle blocks for countless uses. From this experience, you get load-rated blocks for maximum safety. You get blocks with precision-grooved sheaves that prolong rope-life. Lifting is easier, faster. Maintenance and down-time is minimized. Consult your industrial distributor and meantime write for our catalog. Appraise the many exclusive Madesco features and you'll wisely refuse substitutes.

MADESCO TACKLE BLOCK CO., Easton, Pa.

For More Information Circle No. 381 on Inquiry Card—Page 17

For More Information Circle No. 382
on Inquiry Card—Page 17→
PURCHASING



A purchasing agent asks 3 leading questions about V-belts

1 "I stock 85 different sized sets of belts—how can Veelos help me?"

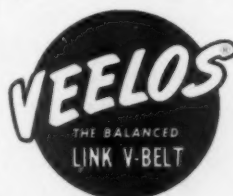
With *four* 100' reels of Veelos (O, A, B, C widths) you can replace as many as 316 different sizes of endless belts—and store your Veelos in *inches of space!* Veelos cuts your inventory to a minimum. No obsolescence or deterioration, no worries about specific sizes. With Veelos, your storage and inventory problems are licked!

2 "How does Veelos cut installation and down-time?"

Veelos is an *adjustable belt*. With Veelos, there's no tearing down outboard bearings, no resetting, tilting or moving motors to make belt replacement or repairs! And you don't have to replace a complete matched set because of one loose belt—Veelos belts adjust to any length, can be altered by adding or removing links!

3 "How do I eliminate costly belt vibration?"

Install Veelos in place of ordinary belts! Veelos belts are absolutely uniform; every stud and link is identical; every foot of the reel is identical and uniform; they're perfectly balanced. Your Veelos salesman can easily prove to you with a Veelos Vibration Analyzer (tested against any V-belt you might now be using) that Veelos *cuts vibration up to 90%!*



Veelos is known as
Veelink outside U.S.A.

Get your free Veelos Data Book; many pages of important information on belt drives. Write to:

MANHEIM

Manufacturing & Belting Company
113 Stiegel St., Manheim, Pa.

**"Industrial Belt
Specialists Since 1911"**

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Catalog No. 55

Fischer SPECIAL MFG. CO.

471 Morgan St.

Cincinnati 6, Ohio

For More Information Circle No. 383 on Inquiry Card—Page 17



C-284-FS

Economic Order Quantity

(Continued from page 300)

Here's what you do: Suppose a supplier offers you a unit price of \$1.00 if you will agree to take 1,000 pieces and a unit price of 95¢ if you will take 10,000 pieces in a given shipment. In the latter case, the value is \$9,500 ($\$.95 \times 10,000$) and, in the former, it is \$1,000 ($\$1.00 \times 1,000$). Let's suppose your usage of the item is 1,000 pieces per month. Therefore, you are comparing buying a 10 month supply at lower price with buying a month's supply.

To find out whether the lower price for the greater quantity more than offsets the added inventory carrying cost, you must find the cost of carrying inventory for both alternatives. In one case, the value of the lot is \$1,000 and the period is a month, so you can find the cost of carrying \$100 worth of inventory from the table. In the other, the value of the lot is \$9,500 and the period is 10 months. Again, you can easily find the cost of carrying \$100 worth of inventory under this condition.

Take the difference between the two costs and you have the added inventory carrying cost resulting from buying the larger quantity. Since this is the added cost per \$100 worth of inventory, you must divide this difference by the number of units that can be bought for \$100 to get the added inventory carrying cost per unit. Compare the added carrying cost per unit with the discount offered and you know whether the larger quantity is profitable or not.

All this probably sounds awfully confusing. Actually it isn't. The difficulty is translating a series of basically mechanical operation into words. After you read this, try some of the sample problems in this article. When you've worked a couple of them, you'll agree that once you've got a table and chart worked up, EOQ is strictly a mechanical operation which can be performed in a few moments. You'll also agree that the cost savings make the effort more than worthwhile.

(Please turn to page 304)



"I never knew BRISTOL BRASS makes phosphor bronze, too"

This chance remark gave us a feeling that we may have been keeping a secret unintentionally. So for the public record: Bristol makes *everything* that can be made from copper, and makes it in that special way called "Bristol-Fashion" . . . including phosphor bronze that nobody can top.

In fact, our customers tell us that Bristol Phosphor Bronze is consistently dependable in its surface smoothness and hardness . . . in its resistance to fatigue and corrosion . . . and in its excellent behavior under forming and machining. They don't tell us in those exact words, but in the form of repeat orders, year after year.

Yes, Bristol makes phosphor bronze strip in all standard sizes. How are you fixed? Write, or phone Bristol, Connecticut, Ludlow 2-3161.

THE BRISTOL BRASS CORPORATION

has been making Brass strip, rod and wire here in Bristol, Connecticut since 1850, and has offices and warehouses in Albany, Boston, Buffalo, Chicago, Cleveland, Detroit, Milwaukee, New York, Philadelphia, Providence, Rochester, Syracuse. The Bristol Brass Corporation of California, 1217 East 6th St., Los Angeles 21. The Bristol Brass Corporation of Ohio, 1607 Broadway, Dayton.

"Bristol-Fashion" means **Brass at its Best**

For More Information Circle No. 384 on Inquiry Card—Page 17



When ordering belting,
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Consistent performance and greater production prove that Graton & Knight leather belts are better for your power transmission needs. That's because Graton & Knight Company is the acknowledged leader in the selection, tanning, and currying of top grade leather.

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Company
WORCESTER, MASSACHUSETTS

World's Largest Manufacturer of Industrial Leather Products

Economic Order Quantity

(Continued from page 302)

The sample problem should have helped resolve a lot of doubts about how EOQ works in practice. Sometimes, special problems come up. Argus anticipated some of them when it worked out these sample problems. They will likely help you too. To work them out, refer to the chart and table shown in the article proper.

PROBLEM: A screw machine part cost \$80.00 per thousand. The release calls for 15,500 parts. EOQ works out at one month's supply which is 11,400 parts. So the order is placed for delivery of 11,400 at the beginning of the release period and 4,100 parts three months later. The vendor complains that this means an extra-set up or carrying inventory.

RECOMMENDED ACTION: First, find if the shipment of 4,100 can be combined with a shipment of 7,300 pieces on a future release. If it can and the vendor will accept this prediction without a firm commitment, allow the schedule to stand. If the 4,100 piece lot can't be combined with a future release, schedule the entire lot of 15,500 for a single delivery. The extra cost of this deviation from economic order quantity is but \$1.75.

PROBLEM: A low-priced part is needed in very large lots—say more than 100,000. The vendor complains that if he ships the whole lot at once, he risks rejection of the entire quantity. On the other hand, by shipping partial quantities he can correct quality problems before the order is complete.

RECOMMENDED ACTION: Tell the vendor that since the order was placed for one lot, it will be inspected and paid for as a single lot. There is nothing to be gained from partial shipments. If the vendor is apprehensive about quality, have him submit samples for approval. Bear in mind, however, that approval of samples does not constitute approval of the entire lot.

PROBLEM: A plastic part has
(Please turn to page 306)



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We're all wrapped up in our work . . . making better cable tapes and electrical insulating materials.

Chase cable tapes are made in a very wide range of materials to meet every requirement of the industry. Binding, insulating, ozone resistance . . . or whatever the requirements . . . Chase has tapes to fit the job.

All Chase electrical insulating products are made to the highest specifications of the best materials available. They are engineered to meet your electrical requirements by men who are specialists in their business.

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CLIP TO YOUR LETTERHEAD
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For More Information Circle No. 387 on Inquiry Card—Page 17

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For More Information Circle No. 388
on Inquiry Card—Page 17

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673 Broadway, New York, N.Y.
ALgonquin 4-4638

For More Information Circle No. 389
on Inquiry Card—Page 17

Economic Order Quantity

(Continued from page 304)

a usage of 8,000 pieces per month. Standard cost is \$35228 each. A vendor quotes prices of \$.3095 for lots of 2,500, \$.3045 for 5,000, and \$.22995 for 10,000. What is the best quantity to buy?

RECOMMENDED ACTION:

Looking at the chart, EOQ is one month's supply when F is \$17.50 and the standard cost is used for figuring Vm. The value of the economic lot is, therefore, \$2,818.-24. Now look at the table. In the one-month column interpolate between \$2,000 and \$3,000 to get a value for \$2,800. This gives a cost of \$101.33 per hundred dollars worth of stock. To buy in 10,000 piece lots means getting a 6 weeks supply worth \$3,522.80 at standard cost. The table shows that the cost of carrying this stock is \$101.54 per hundred dollars.

The bigger lot, therefore, costs an extra \$.21 (\$101.54-\$101.33) per hundred dollars. But the quantity discount saves \$.005 per piece. Since \$100 buys 2,838 pieces at standard cost, the piece price saving is 2,838 x \$.005 or \$1.42 per hundred dollars worth of parts. Obviously it is profitable to buy the larger quantity.

Learn Through Experience

Like a lot of other things, understanding of the economy of lot sizes comes with experience. Expensive parts, particularly, must be checked in detail to avoid error. The economic lot formula recognizes a limited number of factors. Values of the factors are based on averages. So when factors like quantity discounts, freight costs, and the like influence the economy of the lot size, they usually outweigh the factors in the formula. Normally the penalties incurred by deviating from EOQ in any one case are small.

Thus EOQ doesn't tell the whole story. It provides a starting point and assures that restocking and inventory carrying costs aren't overlooked. The formula is really just a useful tool. It serves to assist sound judgment—not replace it.

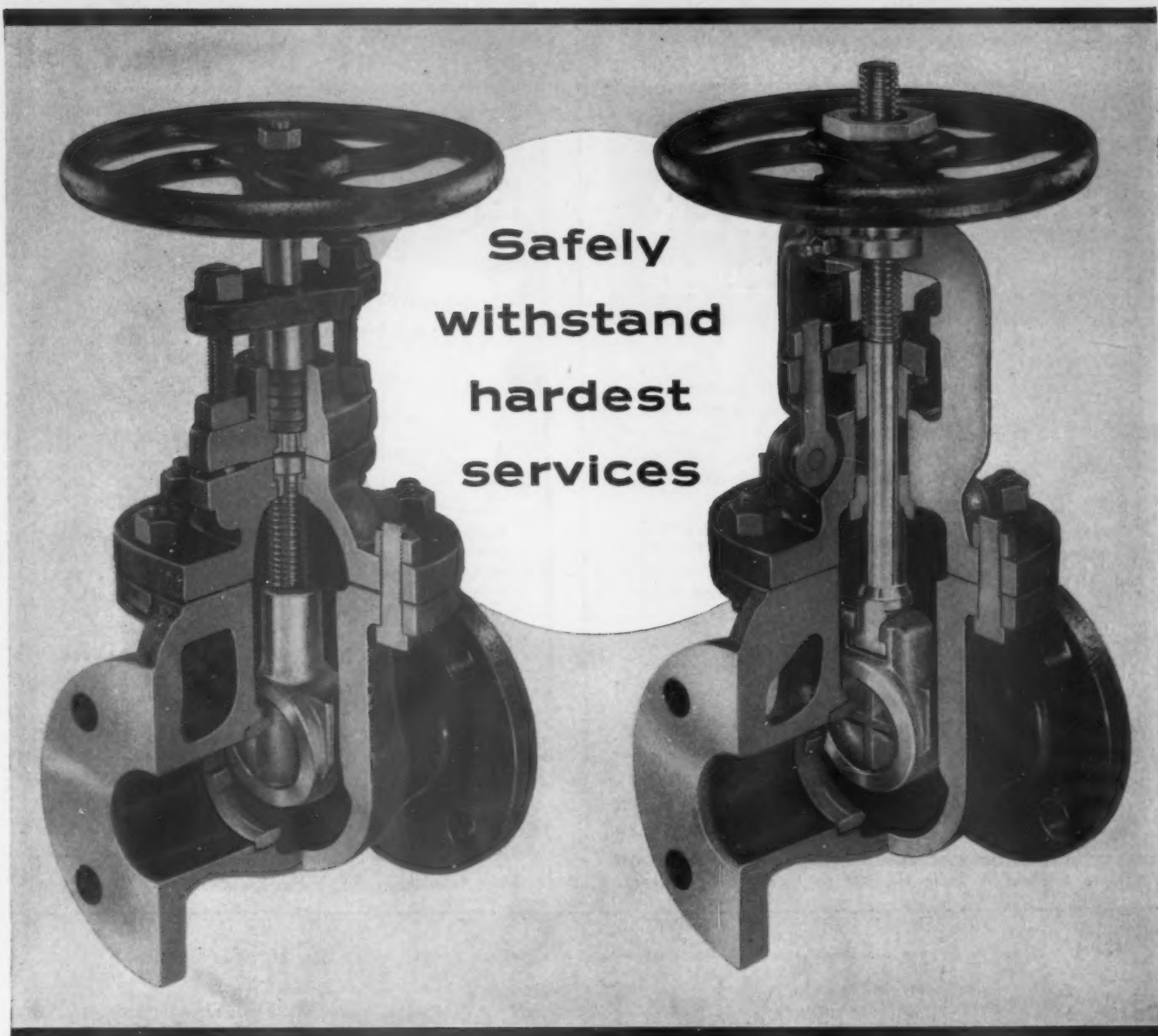


Fig. 1138 (left) non-rising stem, Fig. 1140 (right) OS&Y... two of 29 OIC iron valves with steel valve features. Metals used for trim and pressure parts

in this line include: bronze, manganese bronze, nickel-plated steel, higher strength iron, nickel-alloyed iron, Monel, 18-8 stainless, 11-1/2-13 chrome.

Reduce valve wear. Choose from 29 OIC iron valve numbers with 9 different trim and body metal variations. Depend on them for general use and process industry services handling alkaline liquors, creosote, sour crude, sulphuric acid and caustics.

Working parts design assures positive seating . . . long life

Seat rings are end seated, reducing the probability of loosening in service and affording streamlined flow from port to port. Body wedge guides and a flexible T-head stem-wedge connection combine to assure accurate wedge seating for tight shutoff.

Extra strength adds safety to pressure parts
High-strength iron castings assure pressure

parts made to a minimum tensile strength of 31,000 psi. The body and bonnet, elliptical in shape, resist internal pressure with least possible distortion. Body-bonnet bolting provides uniform gasket loading and, consequently, a pressure-tight seal throughout the pressure range of the valves. Tie ribs, cast between the pipeline flange and the body bonnet flange, prevent distortion from excessive pipeline stresses.

This line's many added features, trim variations, dimensions and end openings are completely described in the new OIC specification folder, Form No. 1005. Write for it.

Order valves from your OIC Distributor.



VALVES

THE OHIO INJECTOR COMPANY • WADSWORTH, OHIO

**FORGED & CAST STEEL, LUBRICATED PLUG,
BRONZE & IRON VALVES**

For More Information Circle No. 390 on Inquiry Card—Page 17

For driving slotted screws **MAGNA FINDER** does it easier, cheaper



The Magna Finder picks up the screw, positions it...so that with one-hand control the bit automatically enters the slot of the screw and drives it home. Alnico Magnet has ten times ordinary "pull" and positively positions screw. Results? Production up, costs down.

Interchangeable with regular power screwdriver finders. Available for all makes of power drivers and all kinds of screws. Thousands in use. Ask your power screwdriver salesman for a demonstration of the complete Magna Driver line.



Magna Finder—U.S. Patent #2,671,484

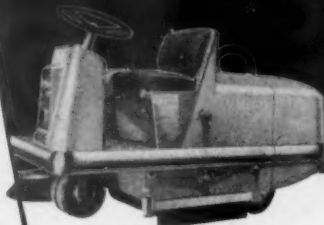
NEW manual ready; write Dept. 85-F, Complete Information on Magna Bit Holders, Finders, Sockets and Hand Screwdrivers. Magna Driver Corporation, 779 Washington Street, Buffalo 3, N. Y.



For More Information Circle No. 391 on Inquiry Card—Page 17

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to outlast—
Powered to
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Model 606

Forget old ideas about power sweepers! This new Wayne embodies features not found on any other sweeper. Dust-free cleaning, outside or inside, with no dust bag to empty because of Wayne's exclusive "Filter-Vac." Hydraulic controls including power dumping. Automotive-type steering for better maneuverability and close-up sweeping. Safety shielding of moving parts. Years-ahead design and operating features.

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or demonstration write:

WAYNE MANUFACTURING CO. 1224 E. Lexington St., Pomona, Calif.

World's Largest Producer of Power Sweepers for Cities and Industry

For More Information Circle No. 392 on Inquiry Card—Page 17

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THE FOSTERMATIC
"BULLDOG" GRIP
"Dogs" are contoured to grip
41% of plug locking surface.

FOSTER Matic

QUICK DETACHABLE
COUPLERS

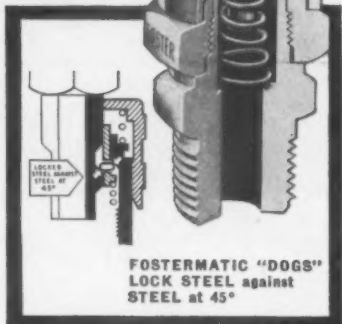
- "Floating Carrier" holds dogs in position and absorbs vibration of pulsating air. Eliminates usual housing wear.
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- Greater Air Capacity — Small Diameter — Light Weight

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2850 Gravois 11-C
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FOSTERMATIC "DOGS"
LOCK STEEL against
STEEL at 45°

For More Information Circle No. 393 on Inquiry Card—Page 17

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Choice of
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31" (No. 1100)
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Same Price

Adjustable-Arm Models



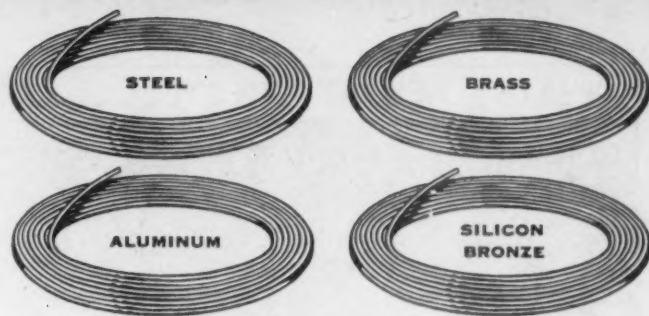
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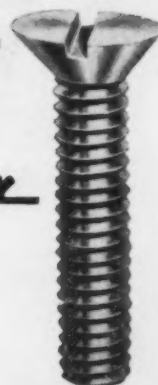
DAZOR FLOATING LAMPS

For More Information Circle No. 394 on Inquiry Card—Page 17

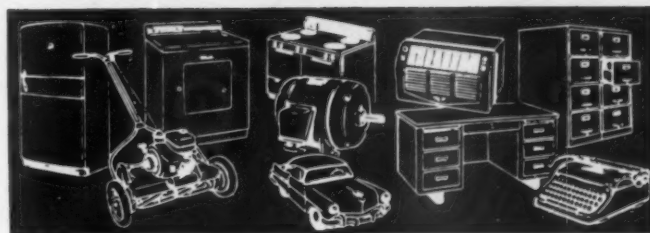
JANUARY, 1956



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For More Information Circle No. 395 on Inquiry Card—Page 17

WHAT'S NEW AT BRISTOL...



Automation and Bristol Through-Broached Screws cut assembly time at Burroughs

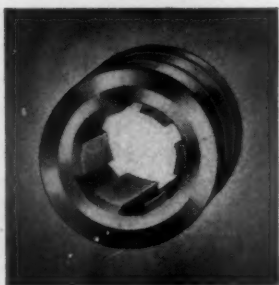
BURROUGHS, DETROIT, reports that Bristol patented Through-Broached Socket Screws, hopper-fed to a power screwdriver, cut in half the time required to insert set screws in critical stop dogs for their Sensi-matic Accounting Machine.

THAT'S NOT ALL. Machine-fed Bristol screws not only eliminate a tedious hand operation, but also cut loss of screws due to dropping and cross threading.

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A.5.5



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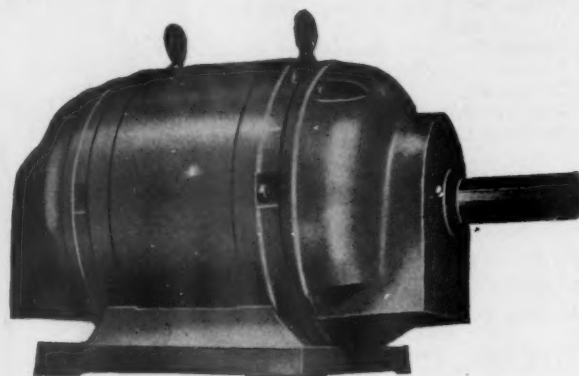
THE BRISTOL COMPANY, Socket Screw Division, Waterbury 20, Conn.

For More Information Circle No. 396 on Inquiry Card—Page 17

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VALLEY BALL BEARING MOTORS

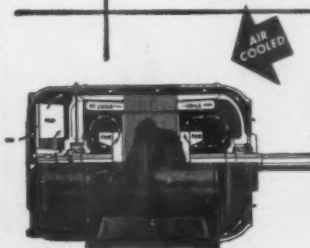
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When specifying the power unit for your machinery, bear these exclusive VALLEY features in mind!

- Specifically designed for 'round-the-clock' duty in high temperatures.
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TOTALLY ENCLOSED FAN COOLED

The latest development in Air-Cooled, Ball Bearing motors. Totally enclosed to assure protection against dripping or splashing liquids, metal chips, and damaging dust. 2 to 60 h. p.

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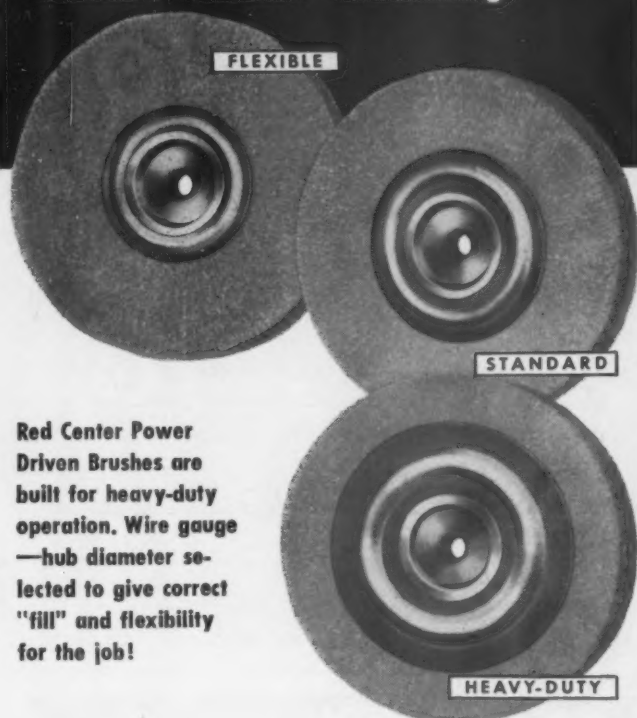
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For More Information Circle No. 397 on Inquiry Card—Page 17

PURCHASING

New Pittsburgh Red Center construction assures faster, better, easier brushing!



Red Center Power Driven Brushes are built for heavy-duty operation. Wire gauge—hub diameter selected to give correct "fill" and flexibility for the job!

Here's how Red Center Brushes work

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For More Information Circle No. 398 on Inquiry Card—Page 17
JANUARY, 1956

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Shown here are typical components described in Tyer's new Rubber Engineering Brochure. Each has solved a special rubber problem—for close tolerances, adhesion, low water absorption, resistance to heat, cold, grease, abrasion or weathering. *They have cut production costs, too!* If you like, a Tyer field engineer will call to show you samples of many other custom molded rubber products. Let him prove to you that *no* rubber problem is too tough for Tyer engineers and technicians.

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For More Information Circle No. 399 on Inquiry Card—Page 17



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plus attractive finish
Look to **WESTERN**

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Your requirements may be for smaller or larger pieces than those shown above. Western's capacity ranges from $\frac{1}{16}$ " to $4\frac{1}{8}$ " round, with all necessary finishing equipment for secondary operations such as milling, drilling, threading, tapping, heat-treating and grinding—also special finishes such as cadmium, zinc and copper plating.

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The Western Automatic Machine Screw Company

division of Standard Screw Company

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Precision Parts and Assemblies Since 1873

For More Information Circle No. 400 on Inquiry Card—Page 17
312

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Just off the press! 16-page, illustrated brochure describing Caledonia's services and facilities for custom-designing and manufacturing transformers.

CALEDONIA

ELECTRONICS AND TRANSFORMER CORPORATION

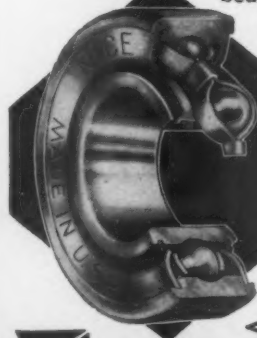
Dept. P-1, Caledonia, New York

For More Information Circle No. 401 on Inquiry Card—Page 17

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**AND NICE CAN
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Product Designers will find many cost saving advantages in the use of NICE Ball Bearings. NICE precision, semi-precision and unground bearings are designed to provide the functionally and economically correct answer to most application problems.



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For More Information Circle No. 402 on Inquiry Card—Page 17
PURCHASING

M•F LOCK NUTS

"FEW OLDER IN
EXPERIENCE—
NONE YOUNGER
IN FACILITIES
AND DESIGN."



**NO SLOTS
NO FIBRE
NO PLASTIC
NO
EXCESS COST!**

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Uni-Torque

- A seasoned organization—
- Using the most modern facilities from laboratory to tool room to production machinery...
- Has developed techniques and methods which create in a simple low-cost product—
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- Try the M-F Uni-Torque for yourself.

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5535 North Wolcott Avenue, Chicago 40, Illinois

For More Information Circle No. 403 on Inquiry Card—Page 17

**Compact
NEW
GAST
rotary No. 6
AIR
MOTOR
delivers**



TWO HORSEPOWER ... weighs only 17 pounds

Here's compact, light-weight power with many advantages as original equipment or for plant use! With this new 2 h.p. Model 6AM, the Gast line of rotary air motors now includes five popular sizes from 1/20 h.p. to 4 h.p.

Some models are available with either foot or flange mountings for horizontal or vertical direct, belt, or gear driving... special reversible rotation, etc. Gast Air Motors are *explosion-proof*, *variable-speed*, *burn-out proof* and *low in first cost*!

Write for Model 6AM Bulletin 855 (or specify h.p. that interests you) and request "Application Ideas" Booklet also!

Gast Manufacturing Corp., Box 117 X
Benton Harbor, Michigan.

Original Equipment Manufacturers for Over 25 Years



GAST • AIR MOTORS TO 4 H.P.
• COMPRESSORS TO 30 P.S.I.
ROTARY • VACUUM PUMPS TO 28 IN.
See Our Catalog in Sweet's Product Design File

For More Information Circle No. 404 on Inquiry Card—Page 17

JANUARY, 1956



because they're made better and cost less!

You save two ways when you specify Freeway Washers. First... they cost less, thanks to our exclusive method of processing. And second... they **CONSISTENTLY** "meet the specs", to minimize assembly time. We'll gladly quote on your next order... and prove these two **BIG** savings to you!

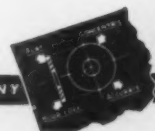


Freeway semi-precision ball bearings give you positive anti-friction protection... for just pennies per bearing. Patented design cuts installation time up to 78%. Send for descriptive literature today.



Freeway "one-hit" stampings are blanked, formed and trimmed in a single operation. You're assured substantial savings on small parts adaptable to this unique type of production. Details available upon request.

Freeway
WASHER & STAMPING COMPANY



P. O. Box 1756, Cleveland 5, Ohio

Gentlemen: Please send us more facts about
() Washers, () Bearings, () Stampings.

Company.....

Street.....

City.....State.....

Signature.....

F

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letters

WELCOME BOOKLET

Our company is considering making up a booklet which would describe our company, what it makes, and what our purchasing policies are. This booklet would be placed in our lobby for reading by salesmen and other visitors.

Before making up this booklet, we would like to study samples of booklets now being published by other companies for the same purpose. If you do not have any such samples, would you be so kind as to list the names of companies who have such a booklet and who you feel would be willing to send us a sample.

R. E. France, Works P. A.
Haynes Stellite Co.
Kokomo, Indiana

● The use of "welcome booklets" in purchasing reception offices is fairly widespread, and is expanding. A number of representative samples have been illustrated and described in these pages. Specimens and references sent.—Ed.

CONSTRUCTION CONTRACTS

It has been our experience that legal knowledge and assistance is probably more important in the area of construction contracts than in any other phase of purchasing for industry. We need assistance on two subjects: (1) waivers of lien, and (2) performance bonds for construction contracts. I would appreciate any references you may be able to give us.

C. F. T.
Chicago, Ill.

● Our legal advisor cites the following reference: Bronxville-Yonkers Corp. vs. Bronxville Gardens, etc., 142 N.Y.S. 2nd, 893, May 16, 1955. This was an action brought in the New York courts to foreclose a mechanics' lien where the construction contract provided:

"The contractor hereby specifically agrees that no mechanics' lien or other claim or claims shall be filed or maintained by it against the said buildings and improvements and real estate appurtenant thereto, for or on account of any work or labor done or materials furnished under the contract or otherwise, for, toward, in or about the erection and construction

of the said buildings and improvements."

In an application to discharge the lien, the court said:

"The motion is granted to the extent that such part of the complaint as makes claim for foreclosure of the mechanics' lien be and the same is hereby dismissed with the provision that the complaint and cause of action shall stand insofar as it seeks recovery of money damages. In addition, the mechanics' lien shall be discharged and cancelled."

DELAYED DELIVERIES

Within the last two or three years you published an article on the legality of clauses penalizing a supplier, or builder, for failure to complete a job by a definite time. We would like very much to have that article if you can locate it.

F. O. Paige, Dir. of Pur.
The Welsbach Corp.
Philadelphia, Pa.

● September 1954 issue, p. 88. "Measures of Damages for Delayed Deliveries," by Albert W. Gray.

INFORMATION, PLEASE

We have seen an item that attracted our attention some time ago, being used in an automotive machine shop. We now have an application to use this item, but cannot remember who manufactured it. The item is a gear tooth that can be inserted in a gear having broken teeth. These pivot teeth are prepared for installation by first drilling or tapping a hole to receive the tooth insert. A different size pivot is used for each particular gear pitch.

Do you have any way of checking this information so that you could supply us with the names and addresses of manufacturers of items for this purpose?

J. C. Ramsay
John Ramsay & Son
Allentown, Pa.

● We do not have information on the product described. If any reader can supply this information, we shall appreciate learning about it so that we can pass it along.—Ed.

INTEREST IN MERGERS

A few weeks ago you sent me the results of a survey on industrial mergers. (Purchasing Opinion Poll, How do Industrial Mergers Help or Hurt Purchasing? November 1955 issue, p. 77.) When I read these figures, it occurred to me that the National Small Business Men's Association, of which I am secretary, might want to use these figures in our monthly bulletin entitled "Pulling Together."

Would it be satisfactory with you, if we use these figures, giving credit to PURCHASING Magazine of course, as our source? The information should prove of great interest to small business generally.

Frank M. Kruger
Indiana Mfrs. Supply Co.
Indianapolis, Ind.

● PURCHASING is happy to have the data put to widest possible use.—Ed.

NATIONAL PRICE INDEX

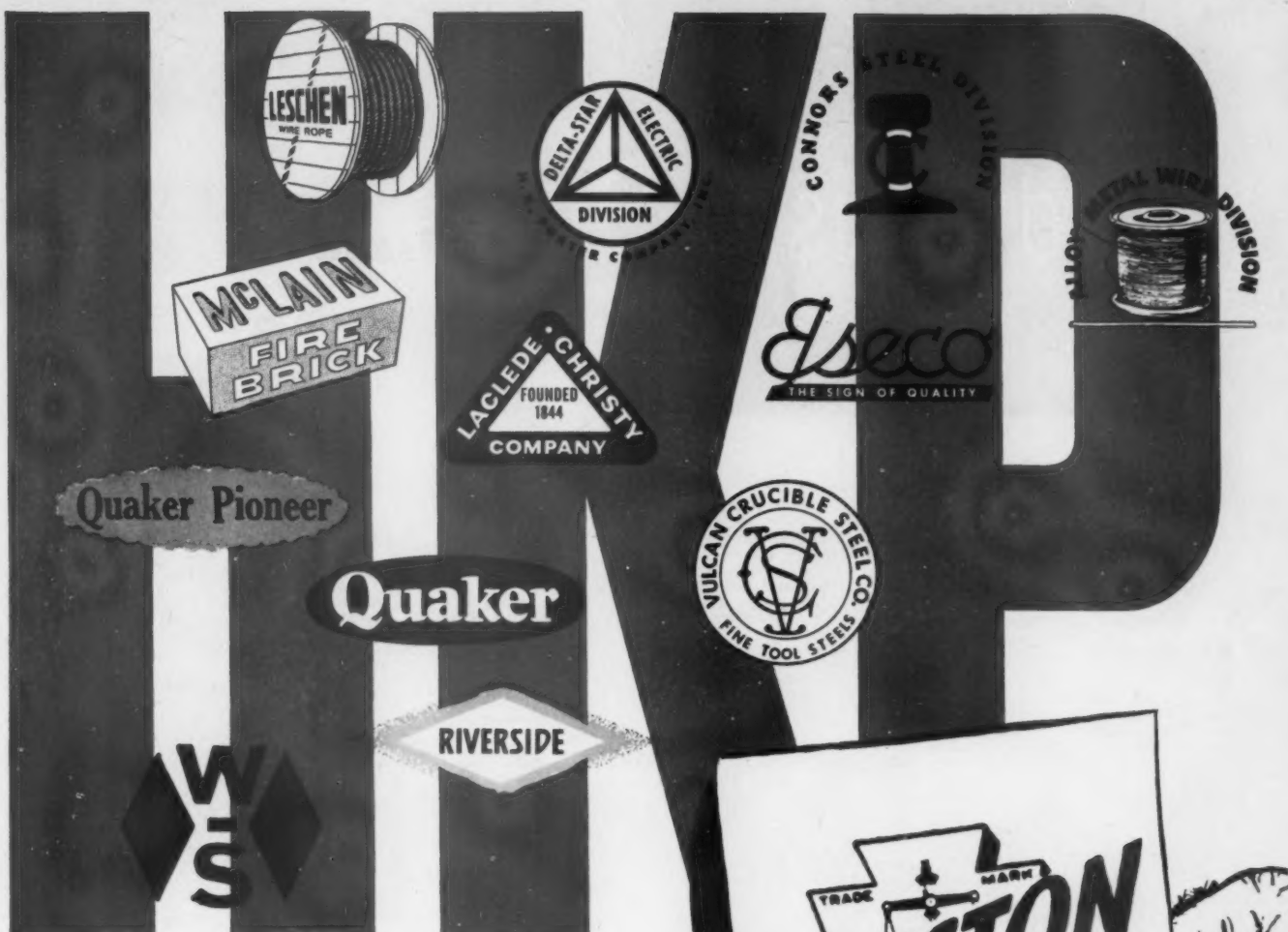
Having read a recent article entitled "Purchasing Research" in PURCHASING Magazine (November 1955 issue, p. 71), we would appreciate your advising us where we may secure a "nationally known index." (Reference is in the concluding paragraph of above article, p. 380.—Ed.)

S. Betman, Asst. P. A.
Turner Hall Corp.
New York, N. Y.

● Widely used governmental index is the Wholesale Price Index compiled by the Bureau of Labor Statistics of the U. S. Department of Labor, Washington 25, D. C. This is obtainable on a regular basis from BLS, at the above address, without charge.

Representative of the reliable national indexes commercially prepared is the Commodity Price Index issued by McGill Commodity Service, Auburndale, Mass., as a part of its service. This is obtainable on a fee basis, and is also published regularly in the Bulletin of the National Association of Purchasing Agents.

A comprehensive article elsewhere in this issue of PURCHASING deals with the interpretation and use of a price index in purchasing work.—Ed.



Henry Disston & Sons, Inc.
 now a proud division of
H. K. Porter Company, Inc.
 announces far-reaching advantages for you

As your finest source of highest quality saws, cutting tools, and steel, the Disston organization is now greatly strengthened. It is fully backed by these great tangible and intangible assets of H. K. Porter Company, Inc. . . .

- outstanding financial stability
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- progressive engineering and scientific research, development and manufacturing policies
- reliance on and confidence in distributors as a vital element in successful industrial marketing

The high quality and superior characteristics of all Disston products and lines will continue to be available to you.

You can depend on vigorous attention being paid to your service and delivery needs.

If you would like further information or answers to particular questions, please do not hesitate to write.

Henry DISSTON DIVISION

H. K. Porter Company, Inc.,
 133 Tacony, Philadelphia, Pa.



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YES,

KALAMAZOO LABEL COMPANY

325 West Ransom Street
KALAMAZOO, MICHIGAN

Please quote us on _____ thousand labels

- ☐ Like attached sample, or
☐ Like attached sketch
☐ Number of colors
☐ Delivery date (.....)
☐ We can furnish plates (number of sets.....)
☐ Gummed ☐ Ungummed

Company name _____

Address _____

City _____

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Title _____

Sure, this is an unusual ad. It is an invitation to share in the benefits of an unusual label designing and production service now observing our 50th Year — our Golden Anniversary.

You are interested in the economical production of superior labels. So are we. Whether you need 5,000 or 5,000,000 labels we dedicate ourselves to producing labels for you that have EYE APPEAL and SALES APPEAL and PRICE APPEAL.

All sizes and shapes of paper labels pour from the ultra-modern and air-conditioned plant,

which has a daily capacity of six million labels.

The staff, who meet the problems of label buyers, are expertly trained and can serve you from a background of wide experience.

We can solve your label problems in this our 50th Year, whether you need single or multi-color, plain or varnished, square or die cut, gummed or ungummed, heat seal or pressure sensitive labels, produced letterpress or offset. What is your label problem today? Tell us about it by filling in and mailing this quotation request to

KALAMAZOO LABEL COMPANY

325 West Ransom Street



KALAMAZOO
MICHIGAN

JANUARY, 1956

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Get TEFLON® that behaves as it should



Did you know that Teflon comes in various "grades"? Grade is governed by processing method and by purity. When you get the right grade for the job you will benefit by consistent performance from Teflon.

Premium grade is derived from virgin Teflon. That's what you get with "electrical grade" Fluoroflex-T. Conformance to important properties is *certified*.* Its non porosity and optimum tensile strength assure reliability in even the most exacting service.

Economy is achieved without impairing chemical inertness in "mechanical grade" Fluoroflex-T. Some physical features of this reprocessed Teflon are even improved, since it offers better resistance to elongation with better dimensional stability the result.

In addition, *uniformity* of both grades is assured by a quality control system approved by the USAF under MIL-Q-5923, and by relieving of internal stresses in Fluoroflex-T rods, sheets, tubes and parts.

Send for more data — and for quotations on your needs.

*Copies of test reports on file available on request.

®Fluoroflex is a Resistoflex registered trade mark for products from fluorocarbon resins. Teflon is the DuPont registered trade mark for its tetrafluoroethylene resin.

RESISTOFLEX

CORPORATION

• Belleville 9, New Jersey

Warehousing Distributors: Western Fibrous Glass Products Co., Los Angeles
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PURCHASING



Acid-resistance of PLEXIGLAS permits safe inspection through corrosion-proof shields, like this hood over etching equipment.



Strength of PLEXIGLAS is reason for its use as safety guards on industrial machinery for protection of personnel.



Transparency of PLEXIGLAS provides all-around observation. Example is this tank for breakdown testing of transformer coils.



Breakage-resistance of PLEXIGLAS results in minimum replacement costs when material is used for window glazing.

Plexiglas — useful in so many ways around the plant

PLEXIGLAS® acrylic plastic is a mighty handy material around a plant. Shown above are just a few of the many ways it is being used to provide safety, increase efficiency and reduce costs in industrial operations.

PLEXIGLAS has crystal-clear transparency, great strength, and is light in weight. It is resistant to most chemicals. Electrical properties are excellent. The long-established reputation of PLEXIGLAS as "the outdoor plastic" indicates its durability under severe conditions of use, indoors or out. In addition, PLEXIGLAS can be heated and formed to almost any shape, can be sawed, drilled and machined like wood or soft metals. A brief investigation will show you many places in *your* plant where a material with this combination of advantages can be used profitably.

PLEXIGLAS R, the lower-cost grade, is especially suitable for industrial plant applications. Call your nearest dealer for information and quick delivery. Dealers are listed under PLEXIGLAS in classified telephone directories of most cities.

Send for This Booklet

Our "Design and Fabrication Manual" tells how to work with PLEXIGLAS. We will be glad to send you a free copy.



Chemicals for Industry

**ROHM & HAAS
COMPANY**

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

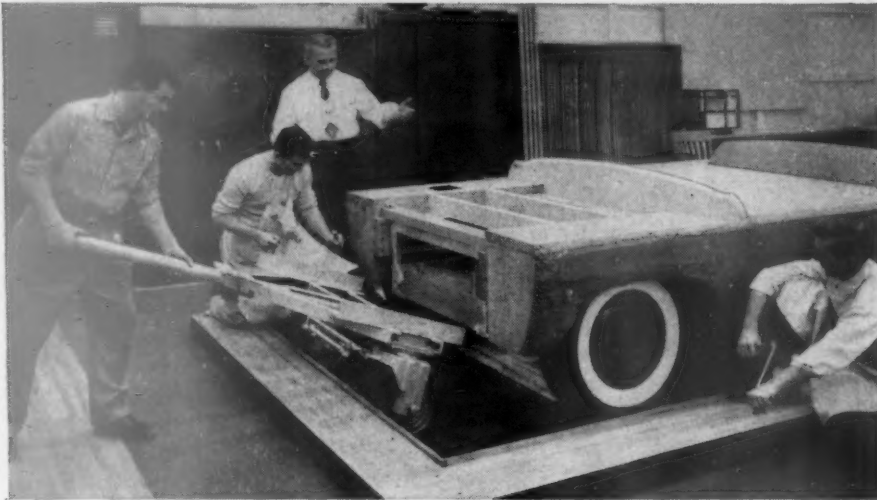
Representatives in principal foreign countries

Canadian distributor: Crystal Glass & Plastics, Ltd.,
130 Queen's Quay at Jarvis Street, Toronto, Ontario, Canada.

MATERIALS-HANDLING NEWS

★ Panel Discussions by Bassick, World's Largest Manufacturer of Casters and Floor Protection Equipment ★

195X clay model Dodge rides on Floating-Hubs



Here's where Dodge brass get their first look at their future entries in the auto sales derby. Foundation for full-scale clay model (above) is wheeled into the Dodge styling studios on special dolly equipped with shock-absorbing Bassick Floating-Hub Casters.

Reason for Floating-Hubs

Job of handling these five-ton clay models easily yet carefully goes to dual-wheel Bassick Floating-Hubs for good reason. Their built-in snubbing action—with spring-controlled wheels offset from axles—absorbs shocks and vibration which could damage the models.



Plaster cast can't stop him!

Newest (and happiest) use for Bassick casters we've come across lately is this mobile cart used by 4-year-old Glen Breither.

Pinned in a chest-to-knee plaster cast by a rare hip ailment that takes years to cure, this Bridgeport boy goes places with a smile on the caster-sled his father invented. Bridgeport's Crippled Children's Workshop is now building the same kind of vehicle for other children.

State occasion for casters



Cast iron gate of the Old State Capitol in Baton Rouge, La., rolls open on an ancient caster (not Bassick, by the way) as you're likely to find in this country.

Photo comes from industrial distributor Dixie Mill Supply Company. Your industrial distributor can check you out on new production methods, latest product improvements, new ways Bassick casters can help you move materials quickly and efficiently.

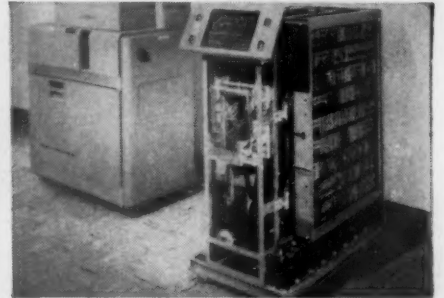
Caster load capacity

Type of tread, motive power (hand or machine), floor conditions, distance and speed of travel all affect the load a caster will carry satisfactorily.

Floor conditions, for example, are vitally important. On smooth concrete floors, loads roll twice as easily as on rough or littered floors.

Load capacities given in Bassick catalogs are based on average operating conditions. They're sound, conservative estimates of what the caster will carry through long years of service.

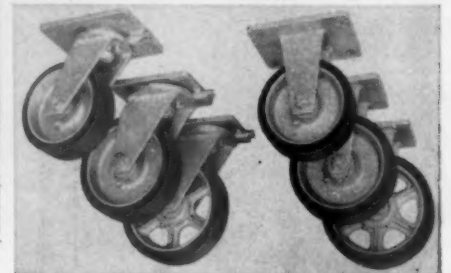
New "brain" fast on feet



IBM's experimental all-transistor calculator features a computing unit that takes half the space—requires only 5% of the power—of a comparable vacuum tube unit.

In keeping with this more efficient headwork is the new electronic brain's footwork. Those are Bassick casters on both the high-speed punching and transistorized calculating units. Couldn't have been a better choice if the brain had picked its own casters.

Casters cut manufacturing costs



Analysts of manufacturing costs have come up with two facts that can save you money! *First:* materials-handling generally runs about 30% of total manufacturing costs. *Second:* materials-handling is the one cost item easiest to reduce.

Bassick casters—like the precision MilSpec casters above—help you cut into the reducible 30%. Casters on equipment provide flexibility of economical movement—in any direction—immediately. They save wear on floors and dollies.



THE BASSICK COMPANY
Bridgeport 2, Conn.
In Canada:
Belleville, Ont.



MAKING MORE ROUNDS OF CASTERS... MAKING CASTERS DO MORE

Then, for Softness,
I always use
FORT HOWARD
TOILET TISSUES!



Wise bird, this! . . . for Fort Howard quality control through every step of manufacture produces tissue unmatched for soft texture and gentle absorbency — yet economically priced to provide a superior tissue service at genuinely low cost.

Whatever your tissue requirements, your Fort Howard distributor salesman will recommend the *right* grade or fold for your requirements from among the 18 produced by Fort Howard. Call him today!



FORT HOWARD PAPER COMPANY, GREEN BAY, WISCONSIN

*For 37 Years Manufacturers of Quality Towels,
 Toilet Tissue and Paper Napkins*

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